instruction manual

AC
VOLTAGE REGULATORS
MILITARIZED

Sorensen & Company, inc.

Richards Avenue

South Norwalk, Conn.

GENERAL INFORMATION

PLEASE READ THIS MANUAL. We think it will help you to obtain the maximum performance from your new Sorensen instrument.

SHIPPING DAMAGE

Sometimes instruments are damaged in transit. We strongly suggest that you inspect and test your instrument as soon as you receive it. If the instrument is damaged or if it fails to operate properly, you should ask the carrier to inspect the shipment. The carrier's claim agent will prepare a report of damage which you should send to us. We will then tell you how to have the instrument repaired or replaced.

SERVICE INFORMATION

If you have any questions about the operation, repair, or servicing of a Sorensen instrument, please contact our local representatives. (A list of representatives appears at the rear of this manual.) If it is more convenient you may contact us directly at the Service Department, Sorensen & Co., Inc., Richards Avenue, South Norwalk, Connecticut.

IMPORTANT

BE SURE TO INCLUDE THE MODEL & SERIAL NUMBER IN ALL CORRESPONDENCE CONCERNING THIS INSTRUMENT. WITHOUT THIS INFORMATION WE MAY NOT BE ABLE TO GIVE YOU PROMPT AND ACCURATE SERVICE.

RETURNS TO THE FACTORY

Should you decide to return an instrument to us for repair, please contact us for authorization to make shipment. We have a number of local service facilities in the United States and Canada which are equipped and staffed to provide you with fast, efficient service. For this reason, we reserve the right to refuse unauthorized shipments to our plant.

WARRANTY

This instrument is warranted by Sorensen & Company, Inc., to be free from defects in material and workmanship. Our obligation under the warranty is limited to servicing the instrument and replacing defective parts when the instrument is returned to the factory with transportation charges prepaid. No other warranties may be implied. The period of warranty is one year after the delivery of the instrument to the original purchaser. Defects caused by improper operating conditions, accidents, misuse, negligence, and the alteration or removal of the nameplate, will void the warranty.

AC
VOLTAGE REGULATORS

(MILITARIZED)

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SORENSEN & COMPANY, INC., Richards Avenue, South Norwalk, Connecticut

SB14-2176-A 3/60

II. SPECIFICATIONS

General

The Models 500MIL and 1500MIL have workmanship and general construction in accordance with military specification MIL-E-4158A (USAF) for ground equipment. They also meet most requirements of MIL-E-1600A, except where a conflict arises with MIL-E-4158A.

The Models D250SAN through D2500SAN are generally in compliance with military specification MIL-E-5272 (USAF) for airborne equipment.

All electrical components are in conformance to JAN or MIL Specifications as listed above wherever practical. Non-JAN parts used have been contractually approved by the Military (Signal Corps and/or Navy).

Electrical Specifications

Model		500 MIL	1500 MIL	D250 SAN	D500 SAN	D1200 SAN	D2500 SAN
Input Power	Voltage Range	105-125		95-130VAC			
	Frequency	50/60 cycles ± 5%		400 cycles ± 10%			
	Power Factor	Unity to 0.7 Lagging					
	Current (Max.)	8A	21A	3.6A	7A	16A	33A
Output Power	VA Rating	*500	*1500	250	500	1200	2500
	Voltage Range	110-120 VAC					
Regulation Accuracy		* ± 0.5% Line & Load Combined (nom. freq.)					
Harmonic Distortion		5% Maximum at nominal frequency					
Ambient Temperature Range		-40°C to +65°C		-40°C to +50°C			
Response Time (Seconds)		0.1	0.2				

*See top of page

*SPECIAL ELECTRICAL RATINGS - Models 500MIL & 1500MIL

VA Rating: It is possible to operate these regulators at 700 & 2000VA respectively. if operation is confined to the ambient - 40°C to +40°C. To operate at 700VA the 500MIL requires that the power factor be 0.95 to unity.

Regulation Accuracy: If operation is restricted to a unity power factor, the regulation accuracy of these instruments increases to ± 0.25% for line & load changes combined.

Forced Air Cooling: With forced air cooling, these regulators may be operated up to +70°C ambient temperature.

Frequency of Input: These regulators may be operated at either 50 or 60 cycle nominal input power frequency. The frequency desired is selected by the frequency switch on the front panel.

MECHANICAL SPECIFICATIONS

MODEL		500 MIL	1500 MIL	D250 SAN	D500 SAN	D1200 SAN	D2500 SAN
Dimensions Self-Cont.	Height	8-3/4"	10-12/"	7-3/16"	7-5/8"	10-1/8"	10-1/8"
	Width	17"	17"	7-5/8"	7-3/8"	17"	17"
	Depth	17"	17"	7-3/16"	8-1/8"	8-13/16"	8-13/16"
Dimension 19" Rack Hgt.		8-3/4"	10-1/2"	None	None	8-3/4"	8-3/4"
Net Weight (Lbs.)		105	155	10	12	38	58
Input Connection		Terminal Board		AN Connector		Terminal Board	
Output Connection		Terminal Board		AN Connector		Terminal Board	
Protective Devices	Overcurrent Breaker	Yes	Yes	No	No	Yes	Yes
	Fuse	Protects Control Circuit From Shorts					
Meters (Optional)		Yes	Yes	No	No	Yes	Yes
*Wound Components		Herm. Sealed		Fosterite Treated			
**Standard Finish		Grey Enamel		Black Wrinkle			
Fungicide		Conforms to MIL-V-173 (Varnish)					

*See Page
**See Page

*Wound Components - the wound components in the Models 500 & 1500 MIL are hermetically sealed in general conformance to MIL-T-27, Grade 1. The wound components in the Models D250SAN - D2500SAN are "Fosterited" for moisture protection. This Westinghouse development licensed by Sorensen entails the enclosing of all but one side of the transformer with a viscous resin capping compound. Then after the transformer windings have been filled with a thin resin by a vacuum process, the open side is capped and the transformer baked.

**Standard Finish - The paint used on the Models 500 & 1500 MIL consists of a primer coat, and grey enamel per MIL-E-15090.

SPECIFICATION NOTES

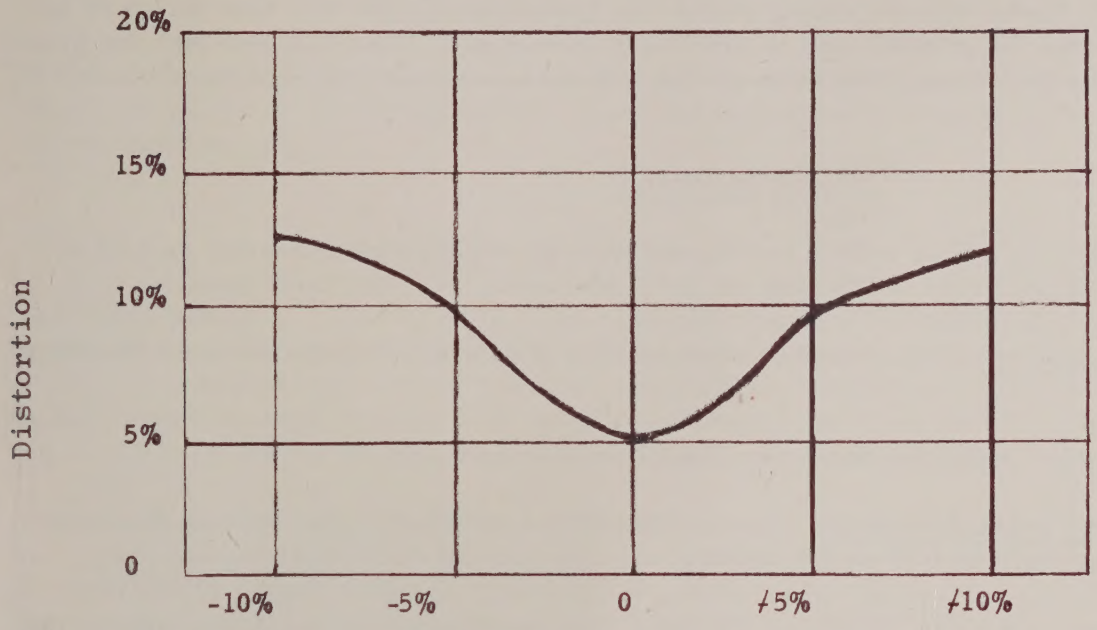
1. Regulation Accuracy: The regulation accuracy is $\pm$ 0.5% for line and load variations combined, at the nominal input frequency with a resistive load. Normally, the output will deviate (within specifications) both plus and minus, at the present voltage. Sometimes, however, the deviation will be all plus or all minus.

Frequency and power factor affect the regulation accuracy so does the temperature ambient. The above specification for regulation accuracy is only guaranteed at a constant ambient temperature, nominal frequency, and unity power factor. If the ambient temperature is held constant, and the frequency and power factor changing, the regulation accuracy will be $\pm$ 1.0%.

2. Response Time: When an abrupt change occurs in the input voltage or load, an instantaneous change in output voltage occurs. This instantaneous change is quickly suppressed by the regulation action. Recovery time or response time is a measure of how fast this change is suppressed. It is defined as the time for the output voltage to effect a 63% recovery from the maximum deviated value, based upon a 10% line voltage change (110-120VAC) or a 50% step change in the load (full to 1/2 rated load).

3. Harmonic Distortion: This value represents the maximum distortion introduced by the regulator above that distortion present in the input line. Distortion specifications are only guaranteed at nominal frequency (60 or 50 cycles for the Models 500 & 1500MIL, and 400 cycles for the D250-D2500SAN models).

OUTPUT DISTORTION VS. FREQUENCY CHANGES



4. Starting Characteristics: In order to allow sufficient time for tube filament heating, it is recommended that these instruments be started with light loads. This characteristic becomes increasingly important as the input voltage approaches its lower limits and the power factor deviates from unity.

5. RF Noise: These regulators are designed without any form of RF noise generation components such as vibrators, gaseous devices, etc.; hence noise is confined to higher order harmonics of 60 cycles and should be negligible above 10KC.

6. Use of Slide Rails: The Models 500 & 1500 MIL are designed for standard slide rails. These rails are available as optional equipment.

III. INSTALLATION AND OPERATION

POWER CONNECTIONS

On all these instruments (except the D250SAN & D500SAN which use AN Connectors), the power connections are made to the terminal board located at the rear of the instrument's chassis. A separate ground terminal is provided, and this terminal is connected to the metal chassis for safety grounding.

The common terminal should be connected to the grounded side of the 115V input line. All loads or load wiring should be connected so that the side which is intended to be the ground side is similarly connected. This insures that the ground side of the line is carried through the regulator and out to the various loads.

CONTROLS

On-Off Switch: This switch (combined with an overcurrent breaker on some models) is provided to disconnect the instrument from the input line.

Voltage Adjust: This potentiometer adjusts the output voltage between 110-120 VAC.

Pilot Lamp: Indicates when the input line is connected.

Frequency Selector Switch: (Models 500MIL & 1500MIL only) selects the input frequency desired, 50 or 60 cycles.

Voltmeter: (Models 500MIL & 1500MIL only) indicates the output voltage setting.

PROTECTIVE DEVICES

Fuse: The fuse located on the front panel is provided only as a protection for the control circuit components in the event of an internal failure. On the Models 500MIL & 1500MIL a spare fuse is also provided.

Overcurrent Breaker: All models with the exception of the D250SAN & D500SAN contain an overcurrent breaker which prevents overloading the regulator. On the 500MIL, 1500MIL, & D2500SAN, this breaker is combined with the on-off switch. This device permits overloads for a few seconds duration of several times normal rating, but disconnects the load from the regulator if the overload persists. Smaller overload currents can exist for much longer periods before the thermal protector operates.

Overvoltage Protection: No overvoltage circuit breakers are provided on these instruments; however, the circuits are so designed that tube filament burn-out will not cause overvoltage of the output.

NAMEPLATES

We strongly recommend that the nameplate be retained if this regulator is incorporated into other equipment. This will eliminate later difficulty if service or parts are required.

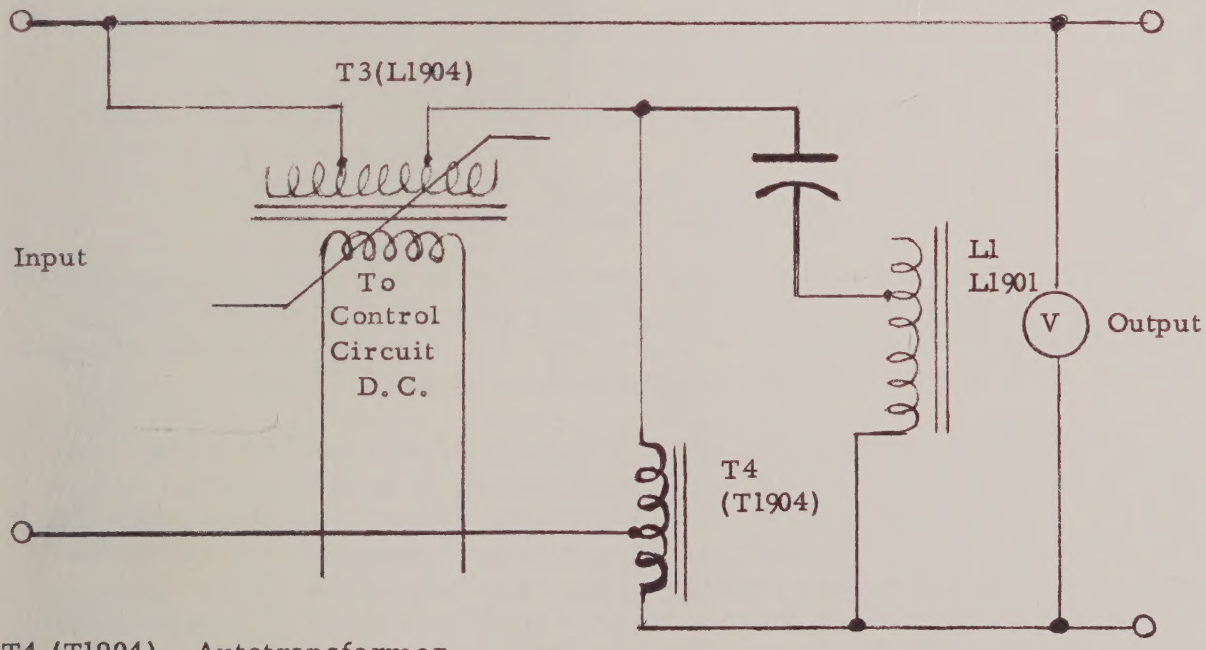
IV. PRINCIPLE OF OPERATION

The operation of these regulators can be best understood by referring to the exact schematic of your instrument. Such schematics are furnished in this instruction manual.

POWER CIRCUIT

The basic power circuit consists of an autotransformer T4 (T1904) and a Saturable Core Reactor T3 (L-1904). The reactor is in series with the primary of the autotransformer across the input terminals. Variation of the impedance of the saturable core reactor will vary the voltage impressed on the primary of the autotransformer, and consequently will vary the output voltage.

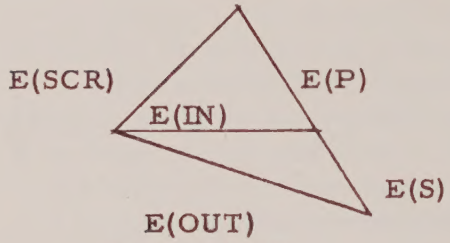
A decrease in reactor impedance, for instance, will increase the portion of the input voltage impressed on the autotransformer primary and will result in an increase in output voltage. Conversely, an increase in reactor impedance will result in a decrease in output voltage.



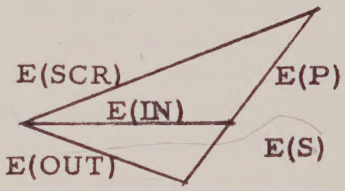
T4 (T1904) - Autotransformer
T3 (L1904) - Saturable Core Reactor
L1 & C2 (L1901 & C1905) - Filter choke (several present in some models) used in conjunction with C2 to reduce harmonic distortion.
V (M1901) - AC Voltmeter

PHASE RELATIONSHIPS

The phase relationships that exist in the power circuit are shown below by Vector diagrams for both high and low input voltages.



E(OUT)
LOW INPUT



HIGH INPUT

E (scr) - Voltage across the Saturable Core Reactor
E (in) - Input Voltage
E (out) - Regulated Output Voltage
E (p) - Voltage across primary of the Autotransformer
E (s) - Voltage across secondary of the Autotransformer.

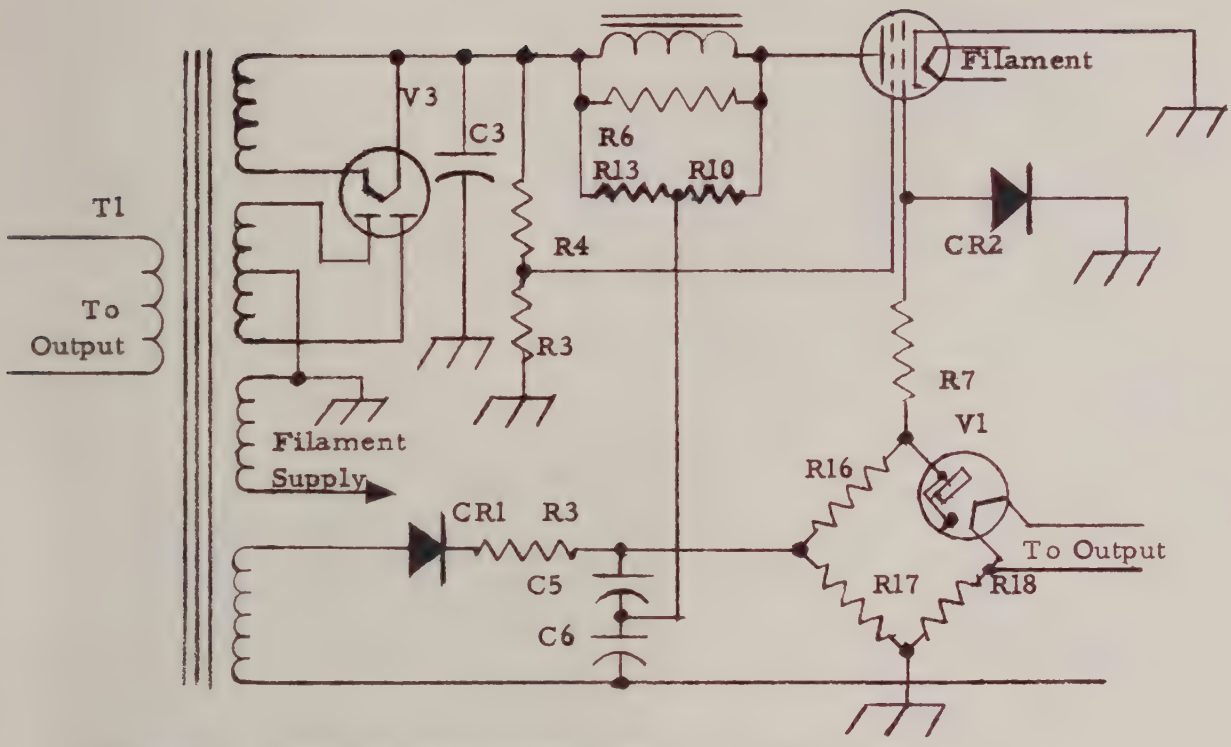
CONTROL CIRCUIT

To achieve voltage regulation, come method is required for varying the reactor impedance by the right amount. The output voltage must be restored to its original value at such times as it may change due to variations in load or input voltage. This is accomplished by the electronic control circuit.

The basic voltage sensitive element is a bridge. One arm of the bridge consists of the diode tube V1. The filament of this diode is lighted by the output voltage. The diode is operated in a temperature limited condition. With this arrangement, a small increment of output voltage results in a change in filament emission, and a large change of plate resistance in the diode. This results in a bridge voltage change, which is applied to the grid of beam power tube V2 and controls the DC saturating current of the reactor T3.

A representative control circuit is shown on the next page.

CONTROL CIRCUIT



V1(V1901) - Sensing, temperature limited, safety diode tube
V2(V1904) - Power amplifier tube
V3(V1903 - Power rectifier tube for V2 plate supply
T1(T1902) - Control circuit power transformer
T3(L1904) - Saturable core reactor
C3(C1901) - Filter capacitor for V2 plate supply
C5(C1902) - Filter capacitor for bridge HV (Bias power supply
C6(C1903) - Same as C5
CR1(CR1901) - Selenium rectifier for bridge HV supply
CR2(CR1902) - Anti-surge rectifier in grid circuit of V2. This device prevents positive grid operation during regulator warm-up which could otherwise cause momentary grid-blocking (and high output voltage).
R3(R1902) - Series limiting resistor in HV bridge supply circuit to limit peak current in rectifier CR1 and Capacitors C5 & 6.
R4(R1904) - Bleeder resistor and voltage divider to supply V2 screen voltage.
R5(R1905) - Same as R4
R6(R1906) - Swamping resistor across DC coil of reactor T3. This limits high peak voltages across this coil on surges.
R7(R1907) - Parasitic oscillation suppressor
R10(R1910) - Resistor in plate circuit of V2 used in the feedback network (anti-hunt)
R13(R1913) - Same as R10
R16, 17, & 18 - Bridge resistor working with the plate resistance of V1
(CR1916-1918) - These 3 resistors establish a voltage sensing bridge with V1.

OPERATION SEQUENCE

A typical sequence of operation is as follows: Assume a rise in output voltage as a result of reduced load or a rise in input voltage. Increased output voltage results in increased voltage and heating of the diode filament. With increased heating, the diode emission increases reducing the plate resistance of the tube. Since the diode forms an arm of the bridge, a change in plate resistance will change the balance condition of the bridge; in this instance, the change results in a more negative potential applied to the grid of V2. The more negative grid signal results in a sharp drop in the plate current of V2 and reduced saturation of the reactor. Reduced DC saturation of the reactor results in an increase in AC impedance which, as pointed out before, lowers the output voltage.

The above action will continue until equilibrium is reached wherein the net change in output voltage is sufficient to compensate for the changed circuit conditions in the control circuit. The gain of the control system is of such magnitude that the regulator will maintain output voltage within the rated tolerance, while compensating for the rated range of input voltage and load variations.

V. MAINTENANCE AND REPAIR

MAINTENANCE

During normal life these regulators require no maintenance or servicing other than the care usually afforded similar equipment. Vacuum tubes should be replaced at the end of their specified life in accordance with the policies established for the particular application.

SPARE PARTS

All components in these regulators are of military grade and can be expected to give a reasonably long period of trouble-free service. As the age of the instrument increases, some components are likely to deteriorate. We suggest that you consult the Replacement Parts List included with this manual for those items we recommend be kept on hand.

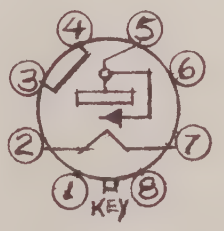
In the event it becomes necessary to replace any part, we strongly suggest that the replacement be of the same value as the original. Substitute parts should not be used unless we advise that the substitute will not impair the performance of your instrument.

2AS15A TUBE DATA

In almost all cases it will be found that if the 2AS15A filament is intact, the tube is good. For those customers who wish to set special tests, the following data is included.

Filament: 1.8 volts DC/AC
310-335MA

Plate: 500 volts DC,
.410-.600MA



REPAIR

CAUTION: DANGEROUS VOLTAGE EXIST IN THESE INSTRUMENTS.
PLEASE OBSERVE APPROPRIATE PRECAUTIONS.

Typical circuit voltages are indicated on the schematic diagram supplied with this manual. All voltage measurements should be taken with a 1000 ohms/volt meter, except grid voltages which should be measured with a VTVM.

In the event of a malfunctioning of the instrument, a systematic checking procedure will provide the quickest and surest method of locating the difficulty. The Trouble Shooting Chart on the following page gives the procedures to be followed in locating sources of trouble.

TROUBLE SHOOTING CHART

Symptom	Cause	Checking Procedure
All troubles	Open Fuse or Bad Tube	The first step in trouble shooting should be to check the fuse, then replace each tube with one known to be good. In many cases this will be enough to correct the trouble.
High Output Voltage	Control Circuit Failure of Defective Reactor	Isolate difficulty by removing V2. If the output voltage drops, the trouble is in the control circuit or diode sensing circuit. If the output does not drop, check the Sat. Core Reactor. If the output voltage drops, check for; (1) open diode sensing circuit per schematic, (2) shorted elements in tube V2, (3) check entire control circuit per schematic for defective component, etc.
Low Output Voltage	Failure of Control Circuit or Blown Fuse	Check for blown fuse or tube failure. Check for open DC coil on the Reactor. Check control circuit per schematic for defective component.
No Output Voltage	Open Power Circuit	Test for an open circuit in one of the following components; on-off switch, circuit breaker, AC windings of the reactor, and autotransformer.
Drift With Age of The Output Voltage Range	Variation of Tube Characteristics with Age	Replace the tubes.
Poor Regulation	Deterioration or Failure of Control Circuit	Replace the tubes. Test the DC power supply voltage per schematic. Check for defective component.
Unable to Adjust Output Voltage Range	Defective Pot.	The output voltage adjust potentiometer may cause irregular output adjustment. In many cases it will be corrected by merely turning it several times as far as possible in both directions. This is a very low resistance adjustment and the contacts can oxidize enough to cause uneven control. If this fails to correct the problem, replace the pot.

USEFUL SERVICE HINT

Inasmuch as the Regulator control circuit is powered from the Regulator output, it will be apparent that in the event of difficulty (such as low output or high output), the control circuit voltages will tend to follow the output voltage. In such an event, it is difficult to interpret differences between actual voltages and those indicated on the schematic diagram. In order to localize the source of trouble, it may be convenient to temporarily transfer the primary of the control circuit power transformer (T1) from the Regulator output to the input line.

COMPENSATION PROCEDURE

Definition of Compensation: Compensation in "Isotronic" terms means a reduction of the amount of voltage deviations caused by line or load changes.

These regulators have several components that are factory adjusted to the optimum value and re-adjustment in the field is not recommended.

However, in the event it is necessary to recompensate these regulators in the field, the following procedure should be used:

1. Loosen one end of R1 (R1901) from its terminal; remove its insulation, and connect a clip lead between the end of R1 and the terminal.

2. With one-half load on the regulator, set the output voltage to 115 volts with a 115V input.

3. Adjust R1 (by sliding the clip lead) so that a minimum output voltage change is observed when the input line is varied from 95 to 130 volts (105-125V for the Model 500MIL).

4. Repeat step 3 using a full load and a one-tenth load on the regulator instead of the one-half load.

5. When a minimum output voltage change is noted with the line and load varied, the proper length of R1 has been obtained. Insulate and replace R1.

6. Replace R15 (R1915) with a piece of the same size wire but of greater length. Progressively reduce the length of R15 while observing the output voltage change with the load varied. When no apparent change takes place, the proper length of R15 has been found.

7. Now that the regulator is within specifications per adjusting R1 & R15, the proper length of R8 (R1908) should be determined. When R8 is the proper length, the output voltage can be varied from less than 110V to more than 120V. Increasing the length of R8 makes the output voltage rise.

Note: If the output of the regulator drops with an increase in load, and a minimum length of R15 (R1915) fails to bring the regulator into specifications, reverse the T2 (T1902) Compensating Transformer connections across R15, and progressively increase the length of R15.

Replacement Parts List

Model 500 MIL

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
R1901	Res. Comp. Ass'y	Compensation Ass'y	190-1380	Sorensen & Co., Inc.
R1902, 1906, 1907	Res. 1.78 Meg. ohms 1W	Bridge Resistor	28-192	MIL-R-10509 RN75B1784F
R1903	Res. 3.3 Meg. ohms 1W	Stability Network	28-195	MIL-R11 RC30GF335K
R1904 *	Res. 10K ohms 55W	Voltage Divider & Bleeder	28-052	MIL-R-26 RW35V103
R1905 *	Res. 25K ohms 113W	Voltage Divider & Bleeder	28-051	MIL-R-26 RW37V253
R1908	Res. Comp. Ass'y	Compensation Ass'y	190-739	Sorensen & Co., Inc.
R1909	Pot. 3 ohms 3W	Voltage Adjust	29-065	Per Sorensen Spec.
R1910-1911	Res. 100K ohms 2W	Coil Voltage Limiter	28-133	MIL R-11 RC42GF104K
R1912	Res. 0.800 ohms 1/3W	Compensation Adjust	28-194	MIL-R-93 RB16AER8000F
R1913	Res. 250 ohms 113W	Internal Load	28-054	MIL-R-26 RW37V251
R1914	Res. 10K ohms 1 W	Parasitic Suppressor	28-108	MIL-R-11 RC30-GF103K
R1915	Res. 1.5 ohms 1/3W	Voltage Setting Resistor	28-144	MIL-R-93 RB16AE1R500F
R1916	Load Line Ass'y	Load Line	190-1379	Sorensen & Co., Inc.
R1917	Res. 150K ohms 1W	Anti Oscillation Network	28-132	MIL-R-11 RC30GF154K
R1918	Res. 100K ohms 1W	Current Limiter	28-193	MIL-R-10509 RN75B1003F
RT1901	Thermistor 2.6 ohms	Temperature Compensation	27-925	Keystone Lt-2.6-234R
C1901	Cap. 4MFD 600V	Filter Capacitor	24-831	Cornell Dubilier TCO-6040J-
C1903 *	Cap. 4MFD 600V	Third Harmonic Cap.	24-831	Cornell Dubilier TCO-6040J-
C1902, A&B	Cap. 2XO.1 mfd 1000V	Filter Capacitor	24-859	MIL-C-25 CP54B4EG104V
C1904	Cap. 2 mfd 600V	Fifth Harmonic Cap.	24-826	Cornell Dubilier TCO-6020J-
C1905	Cap. 0.1 mfd 1000V	Stability Network	24-843	MIL-C-25 CP54B1EG104K
C1906	Cap. 0.02 mfd 1000V	Stability Network	24-821	MIL-C-25 CP26A1EG203K
V1901 (*2 ea.)	Tube 2AS15A †	Sensing Diode	12-010	Thermosen & Co.
V1902 (*2 ea.)	Tube 5933 †	Power Amplifier	12-076	Commercial
V1903 (*2 ea.)	Tube 5Y3WGTA †	Rectifier	12-095	Commercial
CR1901, 1903	Rect.	Bridge HV Rectifier	26-992	Bradley Labs SE3L50H
CR1902	Rect.	Anti Surge Rectifier	26-991	Bradley Labs SE3LA10A342

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
T1901	Power Trans.		126-1677	Sorensen & Co., Inc.
T1902	Comp. Trans.		126-1676	Sorensen & Co., Inc.
L1901	3rd Harmonic Choke		127-1291	Sorensen & Co., Inc.
L1902	3rd Harmonic Choke		127-1290	Sorensen & Co., Inc.
L1904	Sat. Core Reactor		127-1289	Sorensen & Co., Inc.
S1901	Switch D.P.D.T.	Harmonic Network Switch	45-130	JAN-S-23 ST-52N
CB1901	Circuit Breaker	Over Current Breaker And On-Off Switch	92-265	Per A92-265 Sorensen Specs.
M1901	Meter 0-160VAC		94-255	Per SC94-255 Sorensen Specs
F1901 (*5 ea.)	Fuse 2 Amp 3AG		42-439	MIL-F-15160 FO2G2ROOA
	Fuse Holder		42-488	Bussman HKL-X
	Fuse Holder		42-459	Littlefuse 342003
DS1901(*2 ea.)	Pilot Lamp		42-303	#GE47
	Lamp Holder		42-377	MIL-L-3661 LH66BR2

†NOTE: Jan Branded tubes are available only on a Government contract specifying the use of branded tubes, 2AS15A becomes 12-522, 5933 becomes 12-544 and 5Y3 WGTA becomes 12-525.

*RECOMMENDED SPARE PARTS.

Replacement Parts List

Model 1500 MIL

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
R1901*	Volt Comp. Resistor	Compensation Ass'y	190-739	Sorensen & Co., Inc.
R1902	Res. 47K 2W	Current Limiter	28-115	MIL-R-11 RC42BF473K
R1906	Res. 47K 2W	Coil Voltage Limiter	28-164	MIL-R-11 RC42GF473K
R1913	Res. 47K 2W	Stability Network	28-164	MIL-R-11 RC42GF473K
R1904	Res. 10K 55W	Voltage Divider & Bleeder	28-052	MIL-R-26 RW35V103
R1905	Res. 25K 113W	Voltage Divider & Bleeder	28-051	MIL-R-26 RW37V253
R1907	Res. 10K 1W	Parasitic Suppressor	28-108	MIL-R-11 RC30GF103K
R1908*	Res. Diode Adj.	Compensation Ass'y	190-739	Sorensen & Co., Inc.
R1909	Pot. 3 ohms 3W	Voltage Adjust	29-065	Sorensen & Co., Inc.
R1910	Res. 100K 2W	Stability Network	28-133	MIL-R-11 RC42GF104K
R1912	Res. 1.0 ohms 1/3W	Compensation Adjust	28-248	MIL-R-93A RB16AE1ROOF
R1914	Res. 250 ohms 113 W	Internal Load	28-054	MIL-R-26 RW37V251
R1915*	Res. Load Line	Load Line	190-1502	Sorensen & Co., Inc.
R1916,1917,1918	Res. 1.78 Meg. 1W	Bridge Resistor	28-192	MIL-R-10509B RN75B1784F
R1920	Res. 1.5 ohms 1/3W	Voltage Setting Resistor	28-144	MIL-R-93A & S. C. PMD-18 RB16AE1R500F
R1903	Res. 330K ohms 1W	Stability Network	28-151	MIL-R-11 RC30GF334K
RT1911	Thermister 2.6 ohms	Temperature Compensation	27-925	Keystone LT-2.6-234R
C1901	Cap. 4 MFD 600V	Filter Capacitor	24-506	MIL-C-25 CP70E1EF405K
C1902 A&B	Cap. 2X0.1 MFD 1000VDC	Filter Capacitor	24-859	MIL-C-25/4B CP54B4EG104V
C1903	Cap. 0.1 MFD 2000 VDC	Filter Capacitor	24-874	MIL-C-25/7A CP70EJ104K
C1905	Cap. 15 MFD 440 VAC	3rd Harmonic Cap.	24-875	MIL-C-25/7A CP70E1EG156K
V1901*	Tube Jan. 2AS15	Sensing Diode	12-522	Sorensen & Co., Inc.
V1902*A, B	Tube Jan. 5933	Power Amplifier	12-544	JAN 5933
V1903*	Tube Jan. 5Y3WGTA	Rectifier	12-525	JAN 5Y3WGTA
T1901	Power Transformer		126-1696	Sorensen & Co., Inc.
T1902	Comp. Transformer		126-1676	Sorensen & Co., Inc.
T1904	Auto Transformer		126-1691	Sorensen & Co., Inc.

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
L1904	S. C. Reactor		127-1304	Sorensen & Co., Inc.
L1901	A. C. Reactor		127-1303	Sorensen & Co., Inc.
S1901	Switch DPDT	Harmonic Network Switch	45-130	ST-52N (JAN-S-23)
F1901*	Fuse 3 Amp 250V 3AG		42-852	MIL-F-1560, FO2G3ROOG
	Fuse Holder		42-488	Bussman HKL-X
DS1901*	Pilot Lamp T-3 1/4		42-303	G. E. #47
	Lamp Holder		42-377	MIL-L-3661, Type LH66BR2
CR1901*	Selenium Rectifier	Bridge HV Rectifier	26-828	Bradley Labs. SE3L60H
CR1902*	Selenium Rectifier	Anti Surge Rectifier	26-911	Bradley Labs. SE3LA10 H966
M1901	AC Volt Meter 0-150VAC		94-255	MIL-M-10304 MR26W150ACVVR
CB1901	Circuit Breaker 35A	Over Current Breaker And On-Off Switch	92-269	Heinemann AM12-MG3

*RECOMMENDED SPARE PARTS

Replacement Parts List

Model D250SAN

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
R1, R8	Voltage Comp. Resistor	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R2A,B	50K ohm 1/2W. W. W. Resistor	Current Limiter	28-182	MIL-R-93 RB18AE-50001F
R4A-E	10K ohm 2W Resistor	Bleeder	28-113	MIL-R-11 RC42BF103K
R6A,B	27K ohm 2W Resistor	Coil Voltage Limiter	28-114	MIL-R-11 RC42BF273K
R9*	6 ohm 3W Potentiometer	Voltage Adjust	29-106	JAN-R-19 A2SA502AK
R11	NTC Resistor	Temperature Compensation	27-925	Keystone #LT-061-2.6
R15	Load Line Resistor	Load Line	190-833	Sorensen & Co., Inc.
R16A,B	500K ohm 1/2W Resistor	Bridge Resistor	28-183	MIL-R-93 RB18AE 50002F
R17, R18	750K ohm 1/2W Resistor	Bridge Resistor	28-184	MIL-R-93 RB18AE 75002F
R21	1.6K ohm 10W Resistor	Temperature Compensation	28-002	MIL-R-26 Spec., RW31G162
R22	680K ohm 1W Resistor	Stability Network	28-161	MIL-R-11 RC30BF684K
C1	1.0 mfd 600V DC Capacitor	Filter Capacitor	24-823	JAN-C-25 CP53B1EF105K
C2, C6	2 X .1 MFD 1000VDC Cap. (dual)	Filter Capacitor	24-871	MIL-C-25/6A CP69B4EG104V
C4	0.1 MFD 600VDC Capacitor	Stabilizing Capacitor	24-818	JAN-C-25 CP53B1EF104K
C5	0.25 mfd. 600 VDC Capacitor	Third Harmonic Capacitor	24-820	JAN-C-25 CP53B1EF254K
C7	0.02 MFD 600VDC Capacitor	Stability Network	24-870	MIL-C-254 CP25AIEF203K
T1*	Power Transformer		126-1281	Sorensen & Co., Inc.
T2	Compensating Transformer		126-828	Sorensen & Co., Inc.
T3	Saturable Core Reactor		127-960	Sorensen & Co., Inc.
T4	Auto Transformer		126-1082	Sorensen & Co., Inc.
T6	Filament Transformer		126-897	Sorensen & Co., Inc.
L1	Third Harmonic Choke		127-779	Sorensen & Co., Inc.
L3	Lead Choke		127-766	Sorensen & Co., Inc.
V1 (*2ea) †	2AS15A Tube	Sensing Diode	12-010	Thermosen, Inc.
V2 (*2ea) †	6V6GT Tube	Power Amplifier	12-037	RCA
V3(*2ea) †	6X5GT Tube	Rectifier	12-039	RCA
S1*	Diode Bridge Rectifier		26-901	Bradley SE8L50H
S2	Anti Surge Rectifier		26-904	Bradley SE8LA10H342

† NOTE: JAN Branded tubes are available only on a Government contract specifying the use of branded tubes. 2AS15 becomes 12-522, 6V6GTY becomes 12-555 and 6X5GT becomes 12-508.

*RECOMMENDED SPARE PARTS

Replacement Parts List

Model D500 SAN

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
R1	Voltage Comp. Resistor	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R2 A, B	50K ohm 1/2 W.W.W. Res.	Voltage Divider & Bleeder	28-182	MIL-R-93A RB18AE 50001F
R4 A, B	10K ohm 2W Resistor	Voltage Divider & Bleeder	28-113	MIL-R-11 RC42BF103K
R5 A-D	47K ohm 2W Resistor	Voltage Divider & Bleeder	28-115	MIL-R11 RC42BF473K
R6 A & B	27K ohm 2W Resistor	Coil Voltage Limiter	28-114	MIL-R11 RC42BF273K
R8	Diode Adjust Resistor	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R9 *	6 ohm 3W Potentiometer	Voltage Adjust	29-106	JAN-R-19 RA25A2SA6ROAK
R11	NTC Resistor	Temperature Compensation	27-925	Keystone LT-061-2.6
R15	Load Line	Load Line	190-834	Sorensen & Co., Inc.
R16 A, B	500K ohm 1/2W W.W. Res.	Bridge Resistor	28-183	MIL-R-93A RB18AE 50002F
R17 & R18	750K ohm 1/2W W.W. Res.	Bridge Resistor	28-184	MIL-R-93A RB18AE 75002F
R21	1600 ohm 10W W.W. Res.	Temperature Compensation	28-002	MIL-R-26 RW31G162
R19	0.68 meg ohm	Stability Network	28-161	MIL-R-11 RC30BF684K
C1	1.0 mfd 600V DC Capacitor	Filter Capacitor	24-823	JAN-C-25 CP53BIEF105K
C2 & 6*	2X0.1 mfd 1000V DC Cap.	Filter Capacitor	24-871	MIL-C-25/6A CP69B4EG104V
C4	0.1 mfd 600V DC Capacitor	Stabalizing Capacitor	24-818	JAN-C-25 CP53BIEF104K
C5	0.5 mfd 600V DC Capacitor	Third Harmonic Capacitor	24-815	C-25 CP53BIEF504K
C7	0.02 mfd 600V DC Capacitor	Stabilizing Network	24-870	MIL-C-25A CP25A1EF203K
T1	Power Transformer		126-1223	Sorensen & Co., Inc.
T2	Compensating Transformer		126-828	Sorensen & Co., Inc.
T3	Saturable Core Reactor		127-848	Sorensen & Co., Inc.
T4	Auto Transformer		126-1224	Sorensen & Co., Inc.
T6	Filament Transformer		126-1268	Sorensen & Co., Inc.
L1	Third Harmonic Choke		127-849	Sorensen & Co., Inc.
L3	Load Choke		127-850	Sorensen & Co., Inc.
V1 (*2 ea.)†	2AS15A Tube	Sensing Diode	12-010	Thermosen Inc.
V2 (*2 ea.)†	6V6GT Tube	Power Amplifier	12-037	RCA
V3 (*2 ea.)†	6X5GT Tube	Rectifier	12-039	RCA

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
F1 (*5 ea.)	2 Amp 3 AG Fuse		42-408	Littlefuse 312002
S1*	Diode Bridge Rectifier		26-901	Bradley SE8L50H
S2	Anti-Surge Rectifier		26-904	Bradley SE8LA10H342
	Fuse Holder		42-464	Bussman HKP-H

† NOTE: JAN Branded tubes are available only on a government contract specifying the use of JAN Branded tubes. 2AS15 becomes 12-522, 6V6GT becomes 12-507 and 6x5GT becomes 12-508

*RECOMMENDED SPARE PARTS

Replacement Parts List

Model D1200 SAN

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
R1	Comp. Res	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R2A-B	Resistor 50K ohms 1/2W. W.W.	Current Limiter	28-182	MIL-R-93A RB18AE 50001F
R3	Resistor 10K ohms 1/2W	Stability Network	27-133	Allen Bradley #EB-1031
R4A-B	Resistor 10K ohms 2W	Voltage Divider & Bleeder	27-305	Allen Bradley #HB 1031
R5A-D	Resistor 47K ohms 2W	Voltage Divider & Bleeder	27-311	Allen Bradley #HB 4731
R6A-B	Resistor 27K ohms 2W	Coil Voltage Limiter	27-309	Allen Bradley #HB 2731
R8	Diode Adj. Resistor	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R9*	Pot 60HMS 3W.	Voltage Adjust	14-582	Sorensen & Co., Inc.
R11	N.T.C. Resistor	Temperature Compensation	27-925	Keystone #LT-061-NTC-2.6
R15	Load Line Resistor	Load Line	190-876	Sorensen & Co., Inc.
R16A-B	Resistor 500K ohms 1/2W W.W.	Bridge Resistor	28-183	MIL-R-93A RB18AE 50002F
R17, 18	Resistor 750K ohms 1/2W W.W.	Bridge Resistor	28-184	MIL-R-93A RB18AE 75002F
R21	Resistor 1.6K ohms 10W W.W.	Temperature Compensation	28-002	JAN-R-26A RW31G162
C1*	Capacitor 1.0 mfd. 600VDC	Filter Capacitor	24-823	JAN-C-25 CP53B1EF105K
C2,3	Capacitor 2 X 0.1 mfd. 1000VDC	Filter Capacitor	24-871	MIL-C-25/6A CP69B4EG104V
C4	Capacitor 0.1 mfd 600VDC	Stability Capacitor	24-818	JAN-C-25 CP53B1EF104K
C5	Capacitor 2 mfd. 330 VDC 400 N	Third Harmonic Capacitor	24-356	JAN-C-25 (To Sorensen Spec)
C6	Capacitor 0.5 mfd 600 VDC	Filter Capacitor	24-815	JAN-C-25 CP53B1EF504K
L1	3rd Harmonic Choke		127-944	Sorensen & Co., Inc.
L3	Load Choke		127-943	Sorensen & Co., Inc.
T1*	Power Transformer		126-1223	Sorensen & Co., Inc.
T2	Comp. Transformer		126-828	Sorensen & Co., Inc.
T3	Sat. Core Reactor		127-941	Sorensen & Co., Inc.
T4	Auto Transformer		126-1328	Sorensen & Co., Inc.
T6	Filament Transformer		126-1268	Sorensen & Co., Inc.
S1*	Selenium Rectifier	Bridge HV Rectifier	26-901	Bradley Labs. #SE8L50H
S2	Selenium Rectifier	Anti Surge Rectifier	26-904	Bradley Labs. #SE8LA10H342

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
V1 (*2 ea) †	Tube 2AS15	Sensing Diode	12-010	Sorensen & Co., Inc.
V2 (*2 ea) †	Tube 6V6GT	Power Amplifier	12-037	RCA
V3 (*2 ea) †	Tube 6 X 5GT	Rectifier	12-039	RCA
F1(*5 ea)	Fuse 2AMP. 3AG		42-408	Littlefuse #312002
SW1	D.P.S.T. Switch (on-off)	Over Current Breaker	45-125	Cutler-Hammer 8823K5
	Fuse Holder		42-464	Bussman HKP-H
SW2	Circuit Breaker		92-212	Klixon Breaker CA-20

† NOTE - JAN Branded tubes are available only on a Government contract specifying the use of branded tubes. 2AS15 becomes 12-522, 6V6GT becomes 12-507 and 6X5 GT becomes 12-508.

*RECOMMENDED SPARE PARTS

Replacement Parts List

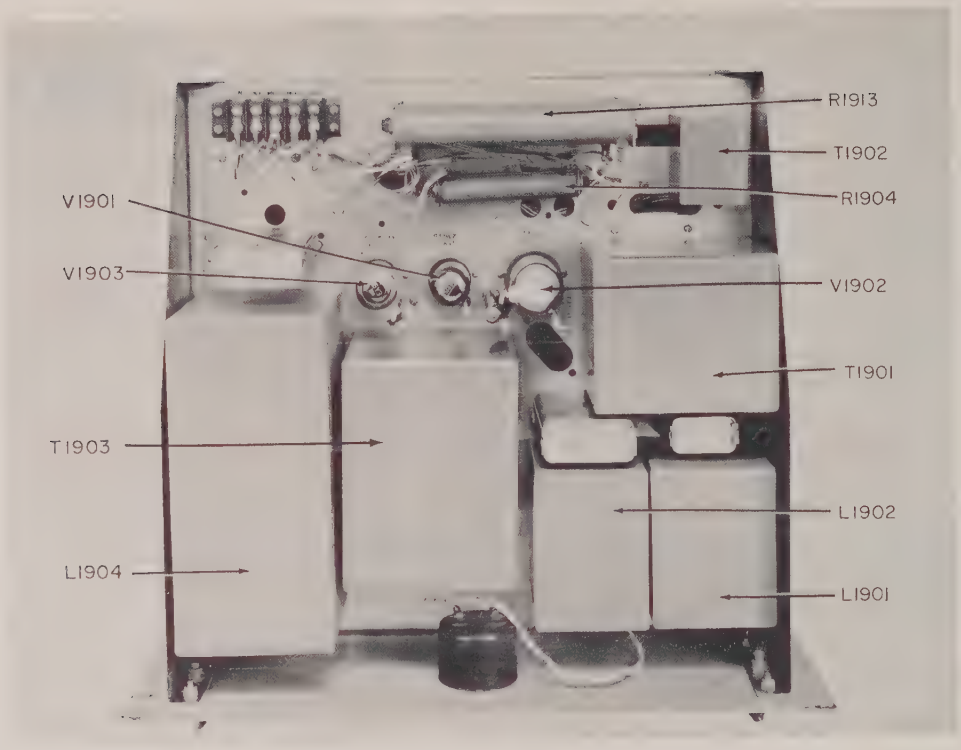
Model D2500 SAN

Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
R1	Voltage Comp. Resistor	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R2, A, B	Resistor 50K ohms 1/2W	Current Limiter	28-182	MIL-R-93 RB18AE 50001F
R3	Resistor 10K ohms 1/2W	Stability Network	27-133	A. Bradley EB1031
R4, A, B	Resistor 10K ohms 2W	Voltage Divider & Bleeder	27-305	A. Bradley HB1031
R5, A-D	Resistor 47K ohms 2W	Voltage Divider & Bleeder	27-311	A. Bradley HB4731
R6, A, B	Resistor 27K ohms 2W	Coil Voltage Limiter	27-309	A. Bradley HB2731
R8	Resistor Diode Adj.	Compensation Ass'y	190-832	Sorensen & Co., Inc.
R9 (*)	Pot. 6 ohms 3W	Voltage Adjust	29-106	JAN-R-19 RA25A2SA6ROAK
R11	Resistor N.T.C.	Temperature Compensation	27-925	Keystone LT-2.6-234R
R15	Resistor Load Line	Load Line	190-877	Sorensen & Co., Inc.
R16 A-B	Resistor 500K ohms 1/2W	Bridge Resistor	28-183	MIL-R-93 RB18AE 50002F
R17, 18	Resistor 750K ohms 1/2W	Bridge Resistor	28-184	MIL-R-93 RB18AE 75002F
R21	Resistor 1.6K ohms 10W	Temperature Compensation	28-002	MIL-R-26 RW31G162
C1 (*)	Capacitor 1.0 mfd 600 VDC	Filter Capacitor	24-823	JAN-C-25 CP53B1EF105K
C2, C3 (*)	Capacitor 2 X 0.1 mfd 1000 VDC	Filter Capacitor	24-871	MIL-C-25/64 CP69B4EG104V
C4	Capacitor 0.1 mfd 600 VDC	Stabilizing Capacitor	24-818	JAN-C-25 CP53B1EF104K
C5	Capacitor 2.0 mfd 330 VAC	Third Harmonic Capacitor	24-356	Gudeman Per JAN-C-25
C6	Capacitor 0.5 mfd 600 VDC	Filter Capacitor	24-815	JAN-C-25 CP53B1EF504K
C9	Capacitor 0.5 mfd 600 VDC	Third Harmonic Padder	24-815	JAN-C-25 CP53B1EF504K
T1 (*)	Power Transformer		126-1937	Sorensen & Co., Inc.
T2	Bridge HV Rectifier		126-828	Sorensen & Co., Inc.
T3	Sat. Core Reactor		127-942	Sorensen & Co., Inc.
T4	Auto Transformer		126-1331	Sorensen & Co., Inc.
T6	Filament Transformer		126-1268	Sorensen & Co., Inc.
L1	Third Harmonic Choke		127-944	Sorensen & Co., Inc.
L3A, B	Load Choke		127-943	Sorensen & Co., Inc.
S1 (*)	Selenium Rectifier	Bridge HV Rectifier	26-901	Bradley SE8L50H
S2	Selenium Rectifier	Anti Surge Rectifier	26-904	Bradley SE8LA10H342

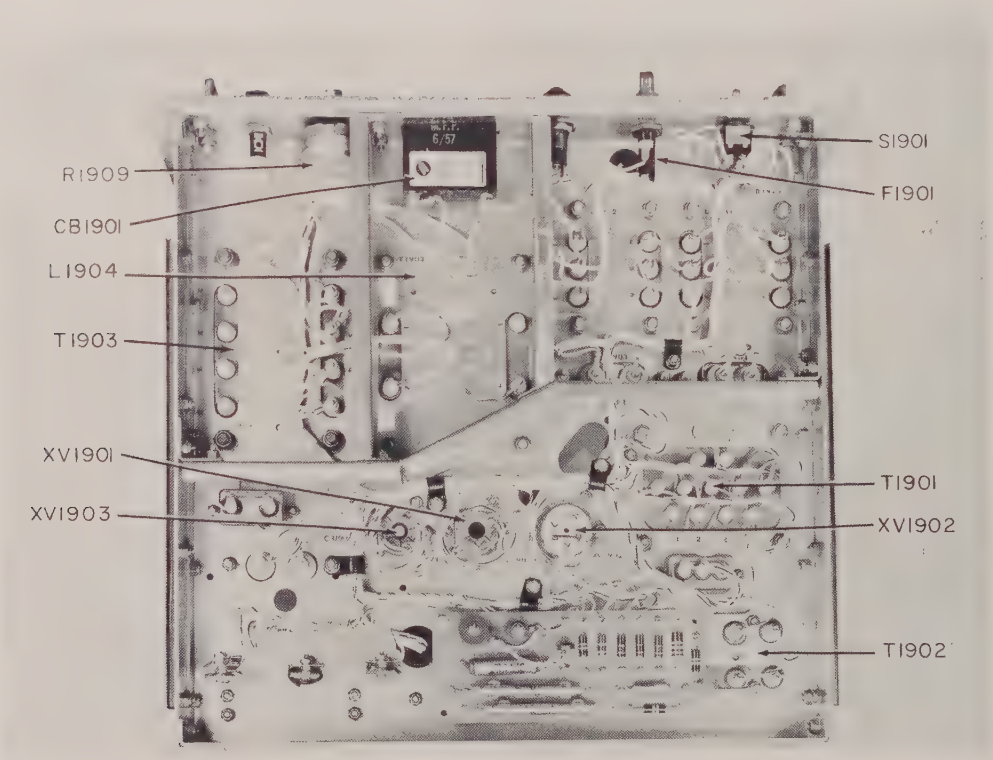
Schematic Symbol	Description	Function	Sorensen Part No.	Specifications
V1 (*2ea.) †	Tube 2AS15A	Sensing Diode	12-010	Thermosen
V2 (*2ea.) †	Tube 6V6GT	Power Amplifier	12-037	RCA
V3 (*2ea.) †	Tube 6X5GT	Rectifier	12-039	RCA
SW1	Switch Current Breaker	Over Current Breaker and On-Off Switch	92-240	D-6364-1-60
F1 (*5ea.)	Fuse 2amp 3AG		42-408	Littlefuse 312002
	Fuse Holder		42-464	Bussman HKP-H

† NOTE: JAN Branded tubes are available only on a Government contract specifying the use of branded tubes. 2AS15 becomes 12-522, 6V6GT becomes 12-507 and 6X5GT becomes 12-508.

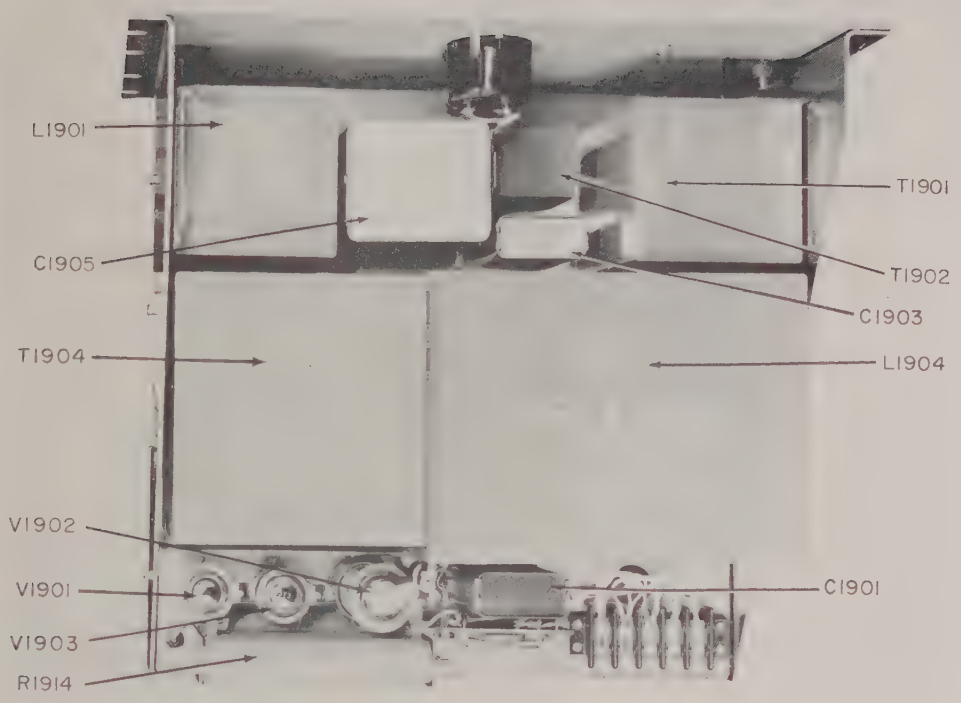
*RECOMMENDED SPARE PARTS



MODEL 500 MIL TOP VIEW



MODEL 500 MIL BOTTOM VIEW



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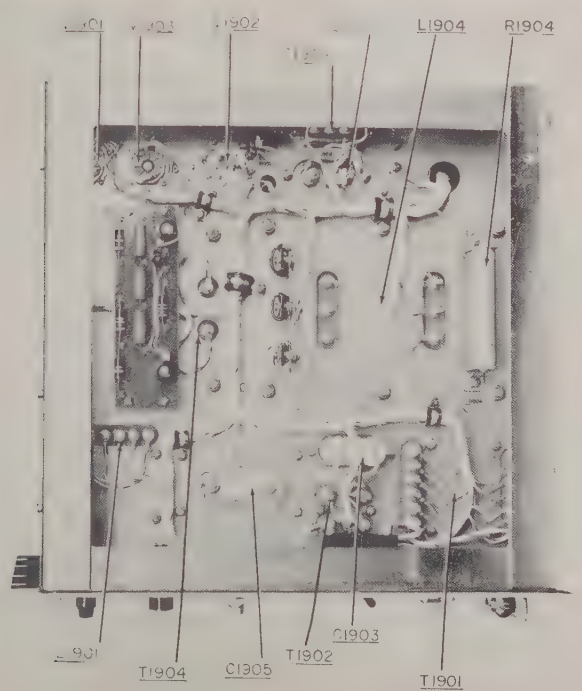
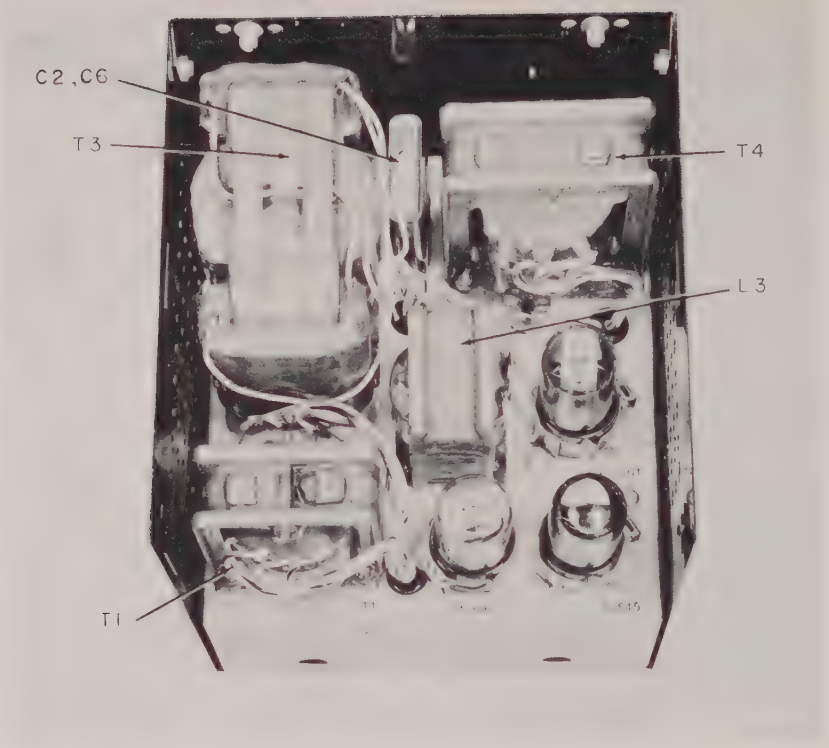
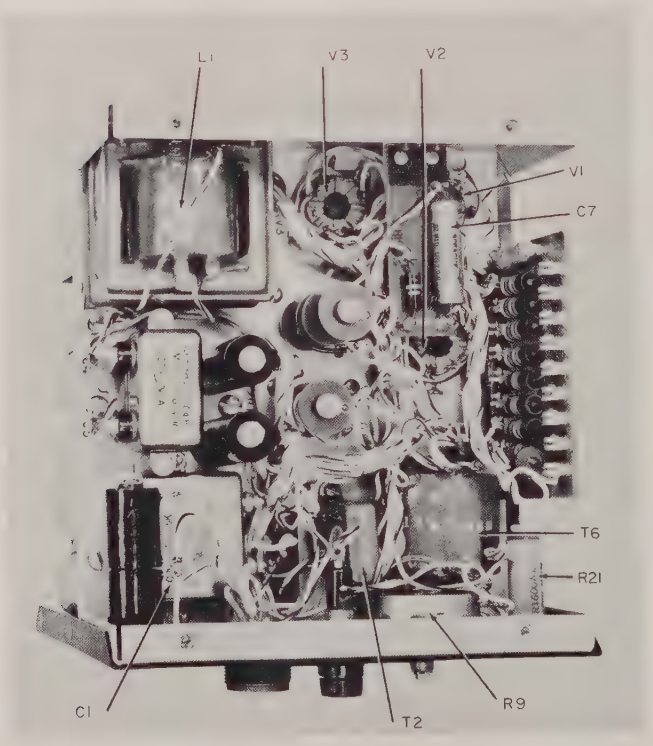


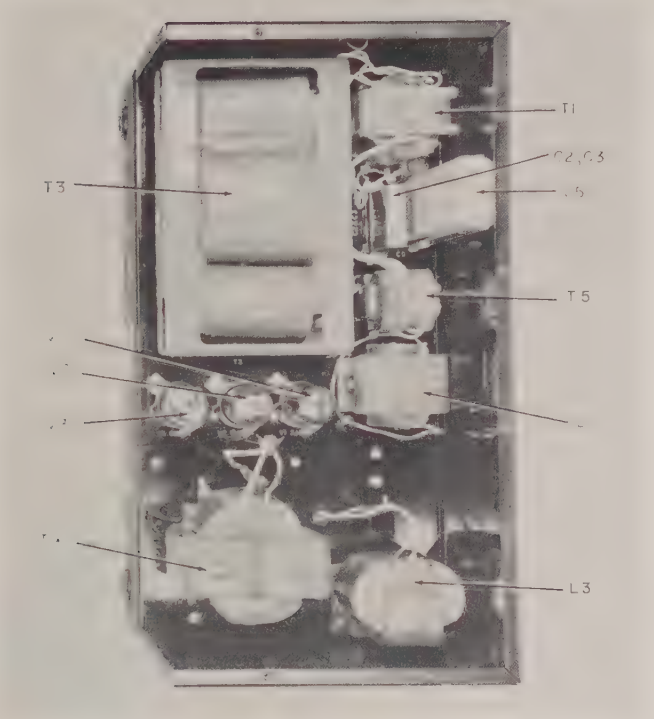
MODEL 1500 MIL BOTTOM VIEW



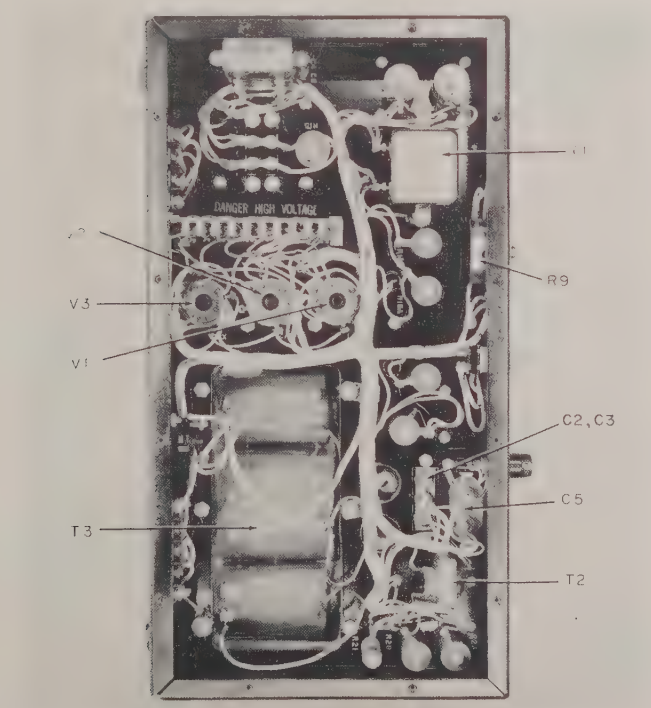
MODEL D500 SAN TOP VIEW
(MODEL D250 SAN IS SIMILAR SEE
CHASSIS LAYOUT ON SCHEMATIC)



MODEL D500 SAN BOTTOM VIEW
(NOTE: MODEL D250 SAN IS SIMILAR
SEE CHASSIS LAYOUT ON SCHEMATIC)

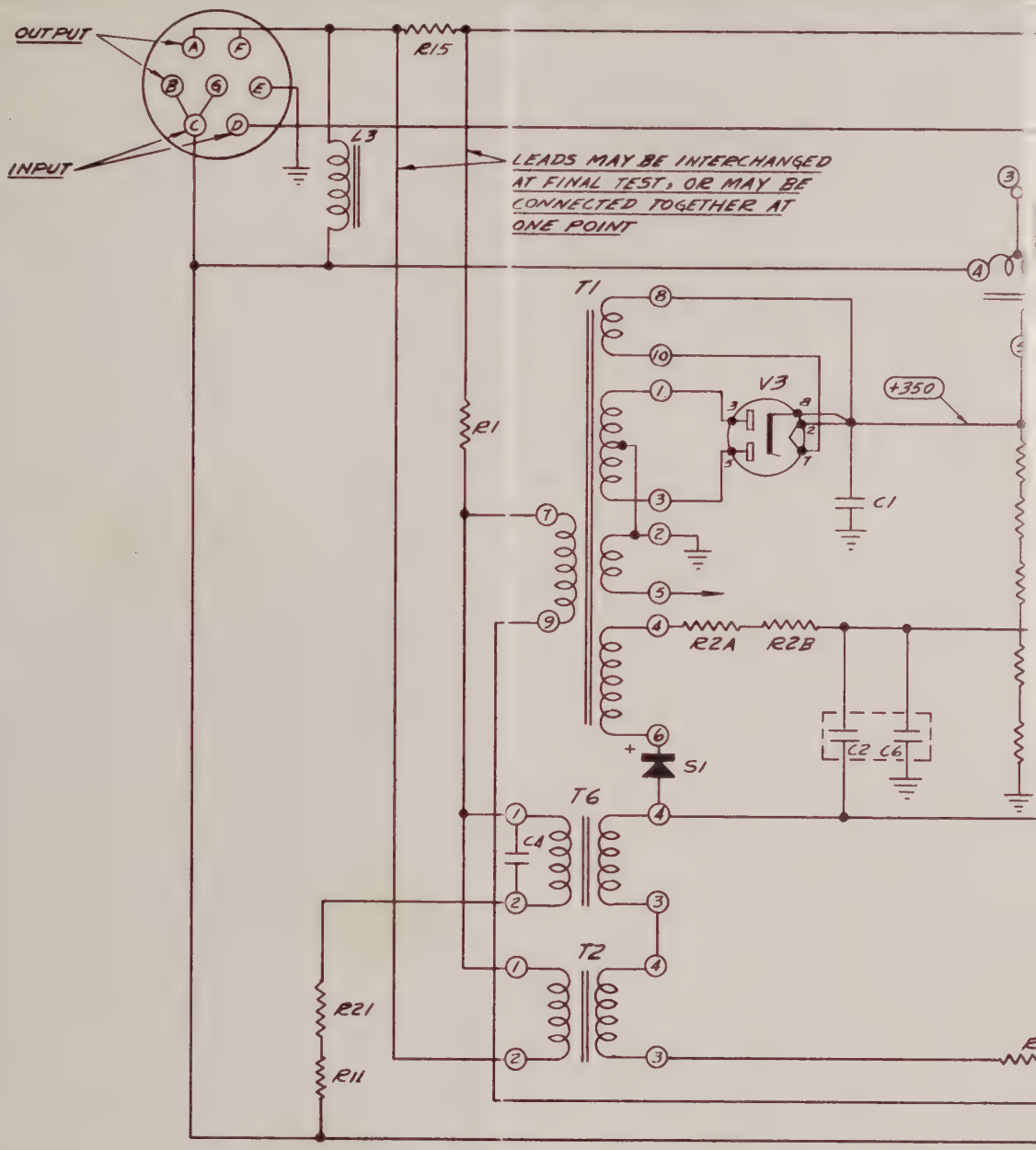


MODEL D1200 SAN TOP VIEW
(NOTE: MODEL D2500 SAN IS SIMILAR)



MODEL D1200 SAN BOTTOM VIEW
(NOTE: MODEL D2500 SAN IS SIMILAR)

NOTES



PART	DESCRIPTION	PART	DESCRIPTION	PART	DESCRI
R1	VOLTAGE COMP. RES. SB190-832	R11	NTC. RES. 27-925	T1	POWER TRANS.
R2A-B	50K Ω 1/2 W. W.W. RES.	R15	LOAD LINE RES. SB190-833	T2	COMP. TRANS.
R4A-E	10K Ω 2 W. RES.	R17	750 K Ω 1/2 W. W.W. RES.	T3	SAT. CORE REACT
		R18	750 K Ω 1/2 W. W.W. RES.	T4	AUTO. TRANS.
R6A-B	27 K Ω 2W RES.			T6	FILAMENT TRANS.
		R16A-B	500 K Ω 1/2 W. W.W. RES		
				L1	3RD. HAR. CHOK
R8	DIODE ADJ. RES. SB190-832			L3	LOAD CHOKE
R9	6 Ω 3W. POT.	R21	1600 Ω 10 W. W.W. RES.		
		R22	680K Ω 1W W.W. RES.		

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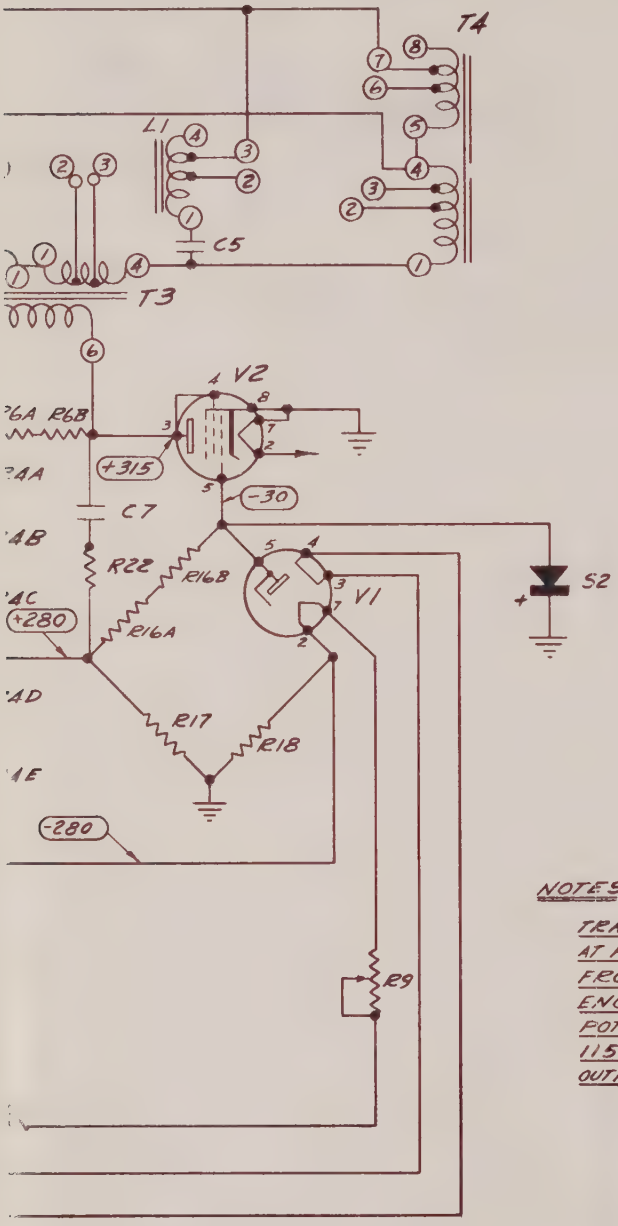
DATE		
APP.		

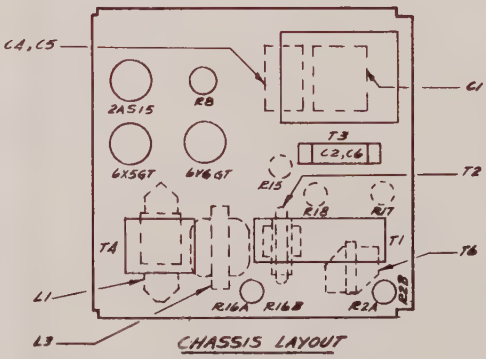
SD 200-641



NOTES:

TRANSFORMER TAPS ARE SELECTED AT FINAL TEST AND MAY DIFFER FROM THOSE INDICATED.
ENCIRCLED VALUES ARE NORMAL D.C. POTENTIALS TO GROUND (CHASSIS) AT 115 V. 400 C.P.S. INPUT & 115 V. 400 C.P.S. OUTPUT & HALF LOAD.

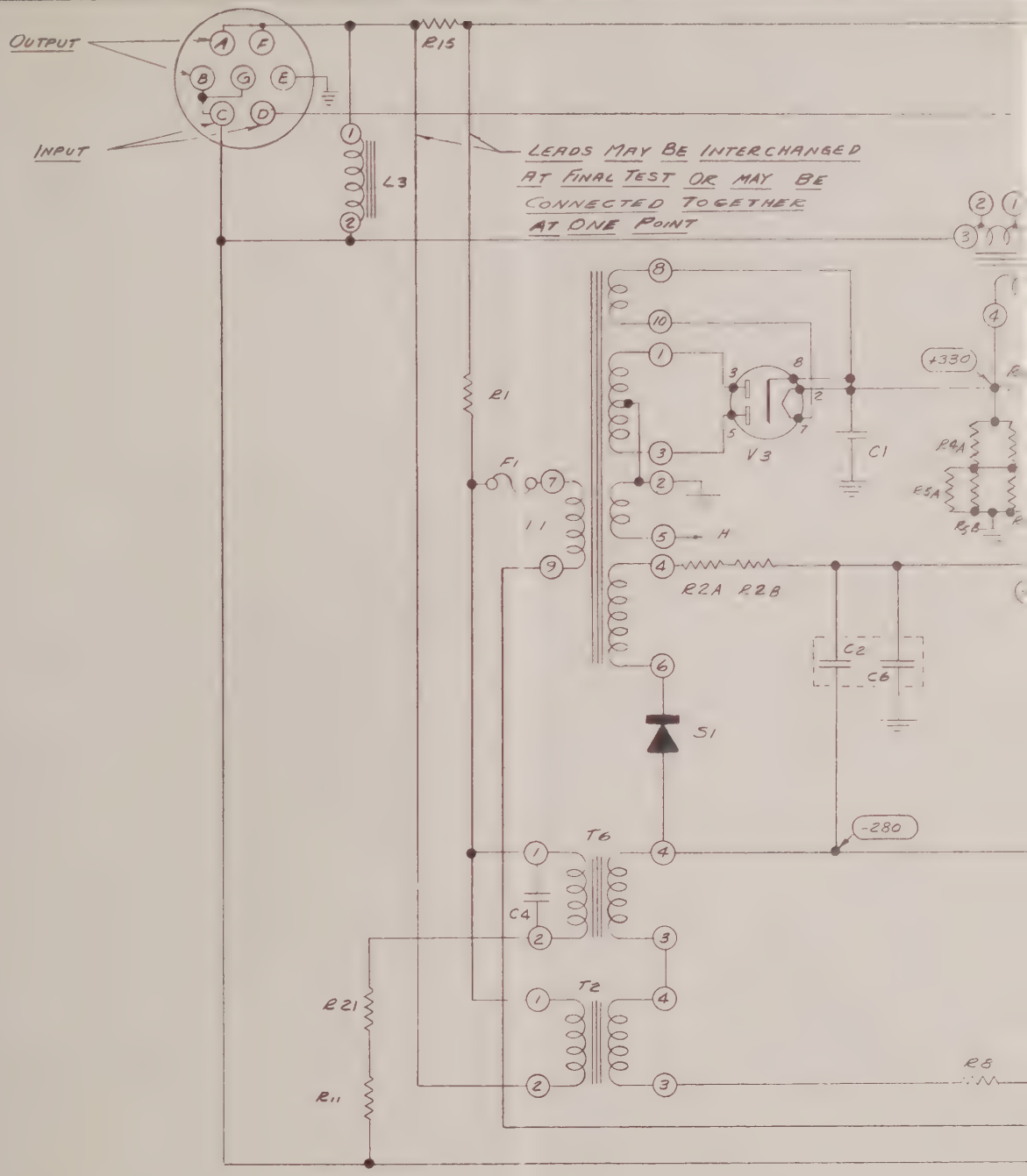
TION	PART	DESCRIPTION	
126-1281	V1	2AS15	
126-828	V2	6V6GT	
127-960	V3	6X5GT	
126-1082	S1	SEL. RECT.	26-901
126-897	S2	SEL. RECT.	26-904
	C5	.25 MFD. 600 V.D.C.	
127-779	C2,C6	2 × .1 MFD. 1000 V.D.C.	
127-766	C1	1. MFD. 600 V.D.C.	
	C4	.1 MFD. 600 V.D.C.	
	C7	.02 MFD. 600 V.D.C.	



CHASSIS LAYOUT

SERIAL Nº D-1275 TO _____

NEXT ASS'Y.	QUAN.	MAT'L.	SORENSEN & CO., INC. STAMFORD, CONN.
		FINISH	SCHEMATIC D 250 SAN
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± 1/64 DECIMALS ± .005 ANGLE ± 1° REMOVE ALL BURRS DO NOT SCALE THIS DRAWING		SCALE	DRAWN 2-2-57 APPROV. SD 200-641

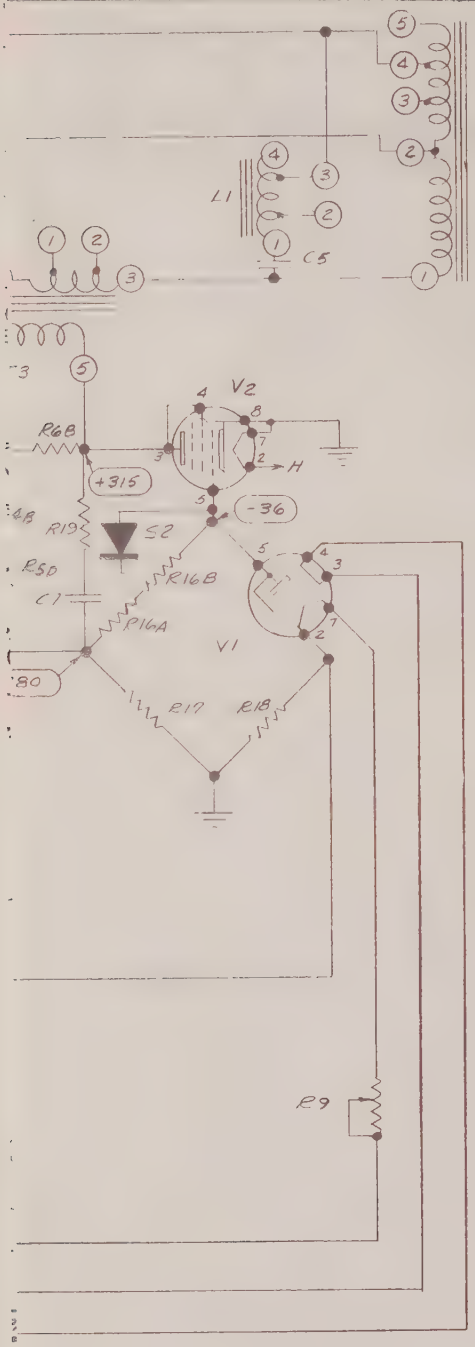


ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	
R1	COMP 5B190-832	R11	N.T.C. RES.	R21	1.6K 10W. W.W. RES.	C7	0.02M
R2A,B	50K ½W. W.W RES.					L1	3 RD
R4A,B	10K 2W RES.						
R5A-D	47K 2W RES.	R15	LOAD LINE RES. 5B190-834			L3	LOAD
R6A,B	27K 2W RES	R16A,B	500K ½W W.W. RES.	C1	1.0 MFD. 600V.D.C.		
		R17	750K ½W W.W. RES.	C4/C6	2×0.1 MFD. 1000 V.D.C.		
R8	DIODE ADJ. RES. 5B190-832	R18	750K ½W W.W RES.			T1	POWE
R9	6Ω 3W POT	R19	680KΩ 1W W.W RES.	C4	0.1 MFD. 600V.D.C.	T2	COMP
				C5	0.5 MFD. 600VDC	T3	SAT.

TOLERANCES ON DIMENSIONS NOT OTHERWISE SPECIFIED

DECI. DIM. FRAC. DIM. ANG. DIM.

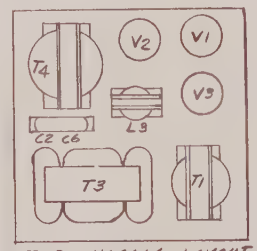
REV. LET.	
REV. ITEM	
REVISION	
DATE	
DRAFTSMAN	
CHECKED BY	
APPROVED BY	



SD 200-791
DRAWING NUMBER

NOTES:
TRANSFORMER TAPS ARE SELECTED AT FINAL TEST AND MAY DIFFER FROM THOSE INDICATED.

ENCIRCLED VALUES ARE NORMAL D.C. POTENTIALS TO GROUND (CHASSIS) AT 115 V. 400 C.P.S. INPUT & 115 V. 400 C. P. S. OUTPUT & HALF LOAD.



TOP CHASSIS LAYOUT

SERIAL NO 0-5186 TO SERIAL NO

DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
600 VDC	T4	AUTO TRAN. 126-1224		
			V1	2A5/15
ARMONIC CHOKE 127-849	T6	FIL. TRAN 126-1268	V2	6V6GT
			V3	6X5GT
CHOKE 127-850				
	S1	SELENIUM RECT. 26-901		
	S2	SELENIUM RECT. 26-904		
TRAN. 126-1223				
TRAN. 126-828	F1	FUSE 2AMP 3AG		
ORE REACT 127-848				

SORENSEN & CO., INC.
STAMFORD, CONN.

SCHEMATIC DIAGRAM

MODEL D500SAN

MAT'L.

FINISH

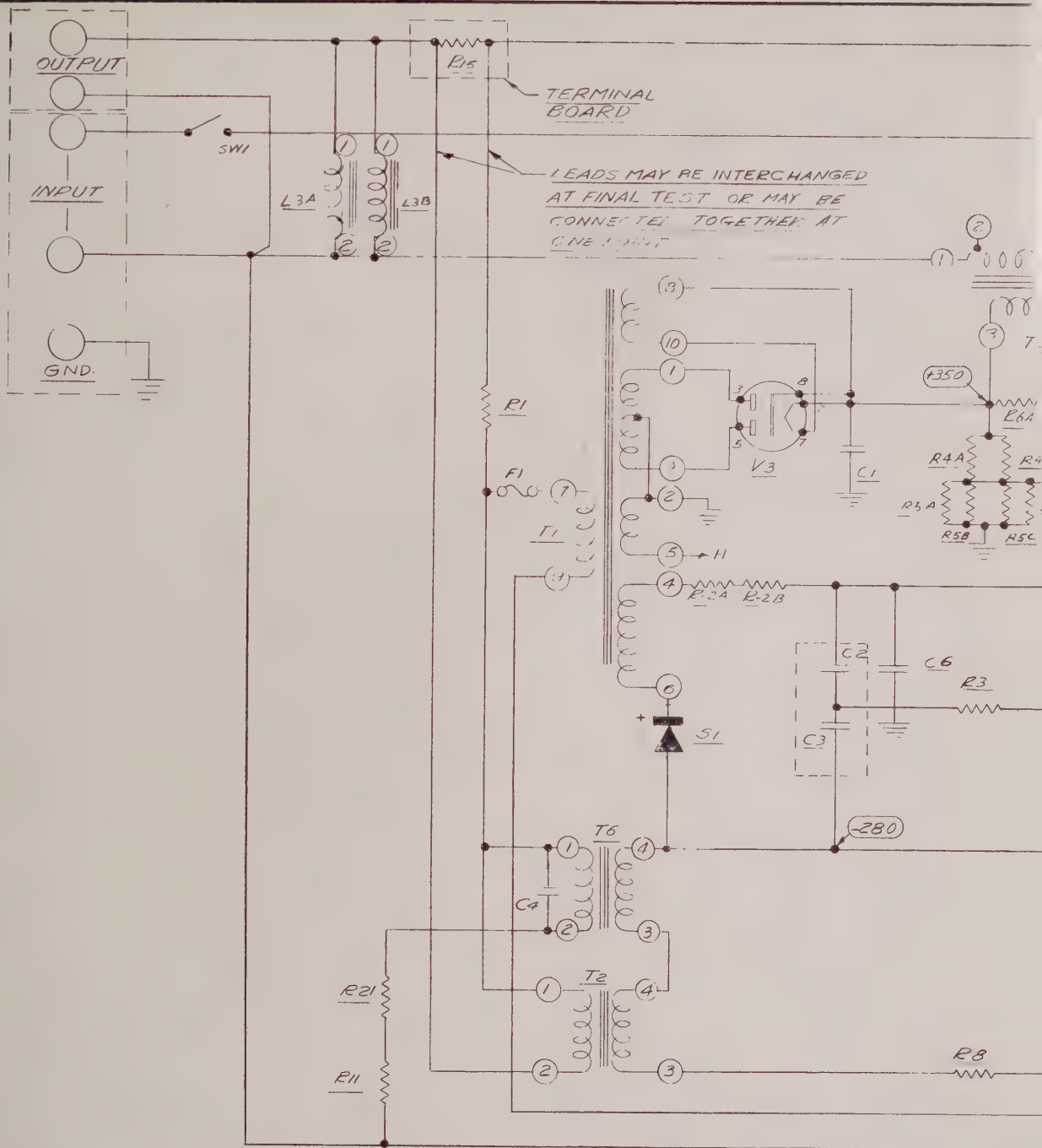
SCALE

DRAWN BY 2/12/57 DATE

ELEC. DESIGN APPR. BY 2-18-57 DATE

CHECKED BY DATE APPROVED BY DATE

SD 200-791
DRAWING NUMBER



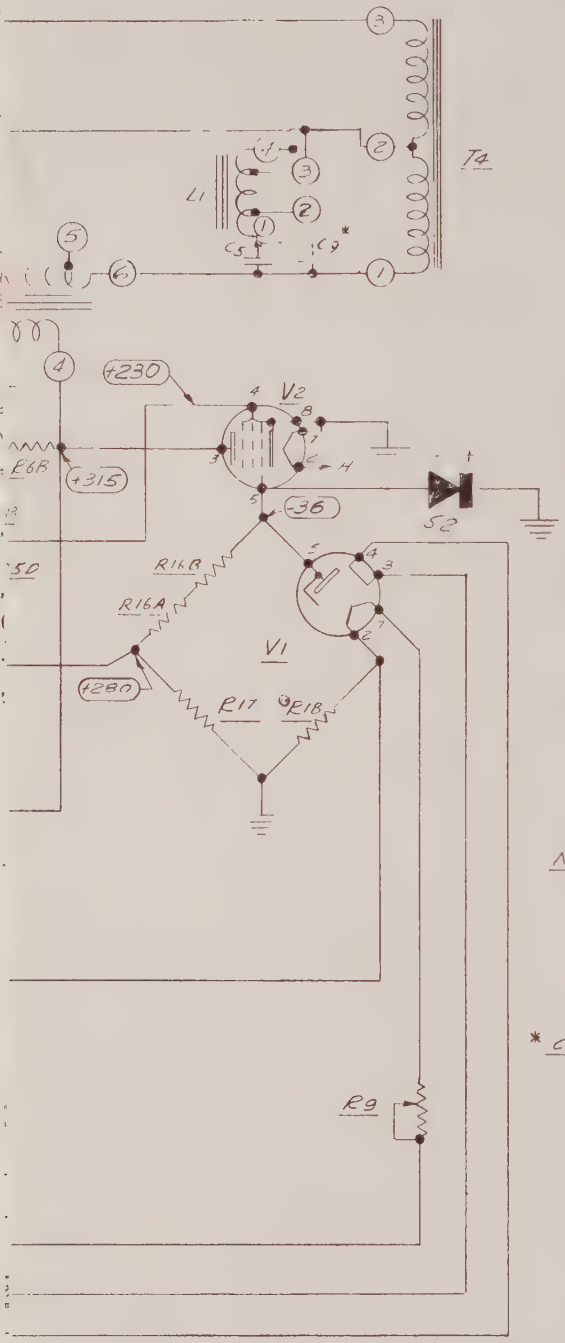
ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DE
R1	COMP. RES SB190-832	R11	N.T.C. RES. 27.925	R18	750 K Ω 1/2 W. W. W. RES.	C9*	0.5 MFD
R2A-B	50K 1/2W W.W. RES.			R21	1.6 K 10W W.W. RES.	L1	3RD HA
R3	10K 1/2 W RES.					L3 A-B	LOAD
R4A-B	10K 2W RES.	R15	LOAD LINE RES SB190-877				
R5 A-B	47K 2W RES.			C5	2 MFD. 330 V. 400 ~		
R6 A-B	27K 2W RES.			C9 C13	2 x 0.1 MFD. 1000 V. D.C.		
R8	DIODE ADJ. RES SB190-832			C1	1.0 MFD. 600 V. D.C.	T1	POWER
R9	6 Ω 3W POT.	R16 A-B	500K 1/2W W.W. RES.	C4	0.1 MFD. 600 V. D.C.	T2	COMP.
		R17	750K 1/2W W.W. RES.	C6	0.5 MFD. 600 V. D.C.	T3	SAT. C

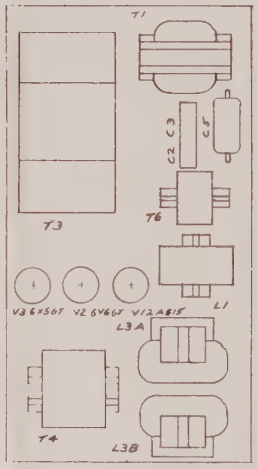
TOLERANCES ON DIMENSIONS NOT OTHERWISE SPECIFIED

DECI. DIM. FRAC. DIM. ANG. DIM.

REV. LET.	
REV. ITEM	
REVISION	
DATE	
DRAFTSMAN	
CHECKED BY	
APPROVED BY	

SD 200-869
DRAWING NUMBER





CHASSIS LAYOUT

NOTE:
ENCIRCLED VALUES ARE NORMAL D.C. POTENTIALS TO GROUND (CHASSIS) AT 115 V. 400 C.P.S. INPUT & 115 V. 400 C.P.S. OUTPUT & HALF LOAD.

* CONNECT (C9) IN FINAL TEST IF NECESSARY

TRANSFORMER TAPS ARE SELECTED AT FINAL TEST AND MAY DIFFER FROM THOSE INDICATED.

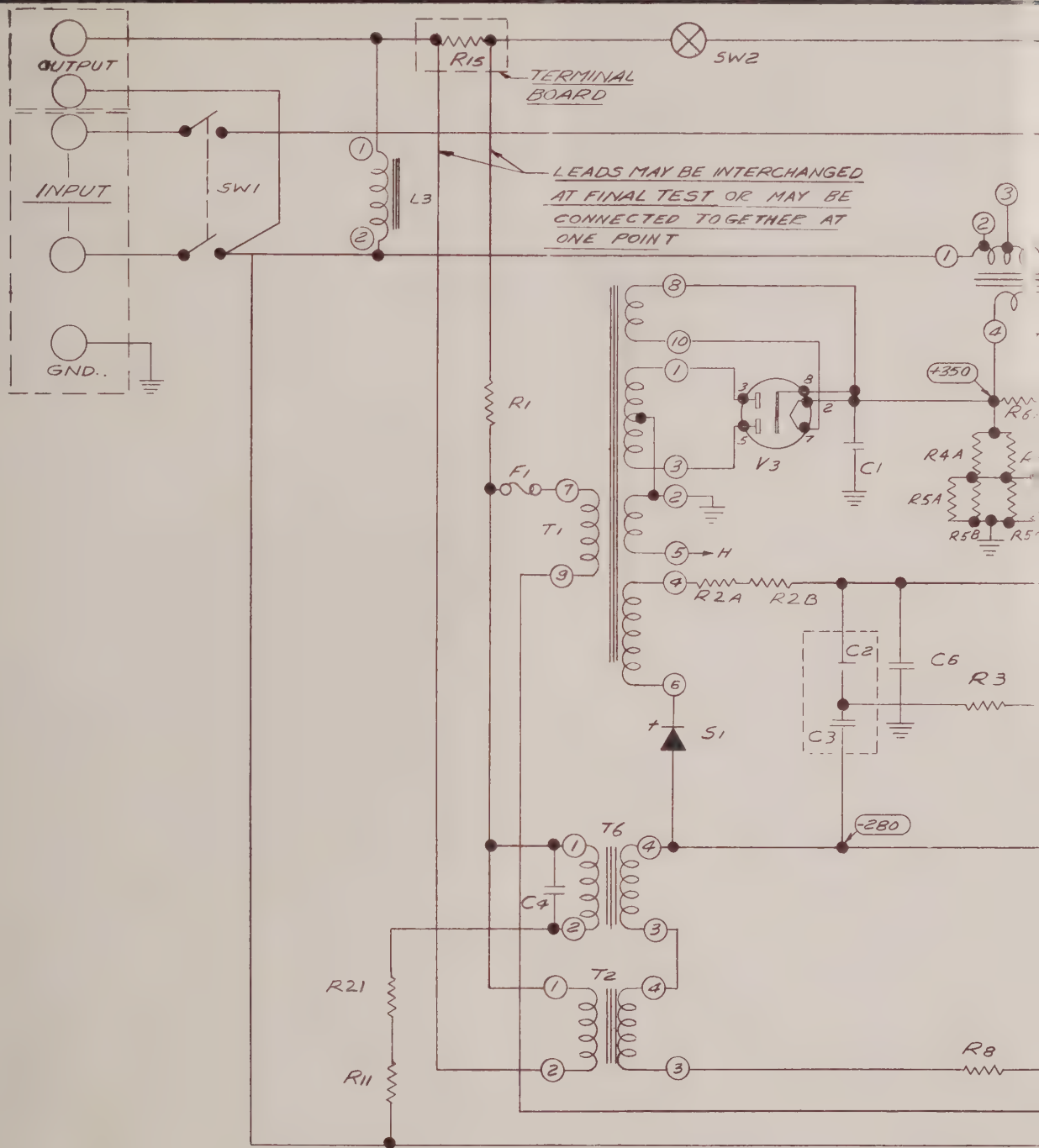
SERIAL NO. D-3060 TO _____

SCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
600 V. D.C.	T4	AUTO TRAN. 126-1331		
MONIC CHOKE 127-944	T6	FIL. TRAN. 126-1268	V1	2A5 15
			V2	6V6 GT
CHOKE 127-943			V3	6X5 GT
	S1	SELENIUM RECT. 26-901		
	S2	SEL. RECT. 26-904	SW1	KLIXON SWITCH BREAKER 92-240
TRAN. 126-1937				
TRAN. 126-828	F1	FUSE 2 AMP 3AG		
RE REACT 127-942				

SORENSEN & CO., INC.
STAMFORD, CONN.

SCHEMATIC DIAGRAM
MODEL D2500SAN

MAT'L.			
	G.H.	8-2-55	JSL 8-17-55
	DRAWN BY	DATE	ELEC. DESIGN APPR. BY-DATE
FINISH	CHECKED BY	DATE	APPROVED BY DATE
	SD 200-869		
SCALE	DRAWING NUMBER		

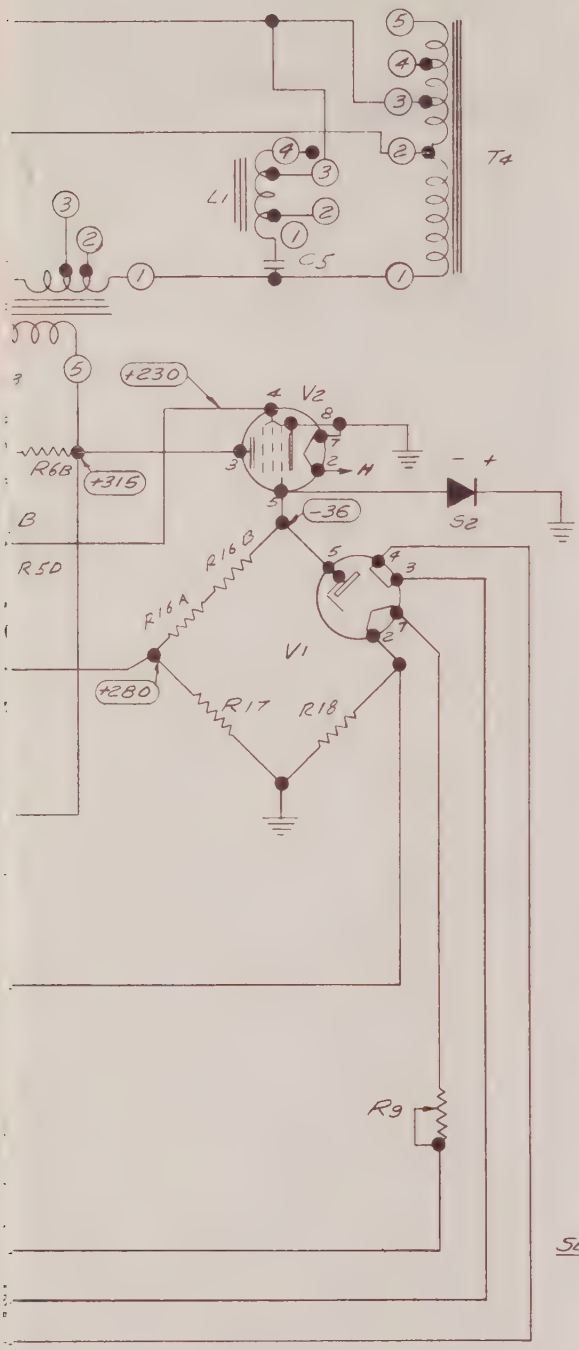


ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	D
R1	COMP RES. SB190-832	R11	N.T.C. RES. 27-925	R18	750KΩ 1/2W. WW. RES.		
R2A-B	50K 1/2W W.W RES.			R21	1.6K 10W W.W. RES.	L1	3 RD HA
R3	10K 1/2W RES.						
R4A-B	10K 2W RES.	R15	LOAD LINE RES SB190-876	C5	2 MFD. 330V 400~	L3	LOAD
R5A-D	47K 2W RES.			C2A-C2B	2 x 0.1 MFD. 1000V. DC.		
R6A-B	27K 2W RES			C1	1.0 MFD. 600V. DC.		
R8	DIODE ADJ. RES. SB190-832			C4	0.1 MFD. 600V. D.C.	T1	POWE
R9	6Ω 3W POT.	R16A-B	500K 1/2W W.W. RES.			T2	COMP
		R17	750K 1/2W W.W. RES.	C6	0.5 MFD. 600V. DC.	T3	SAT. C

TOLERANCES ON DIMENSIONS NOT OTHERWISE SPECIFIED		
DECI. DIM.	FRAC. DIM.	ANG. DIM.

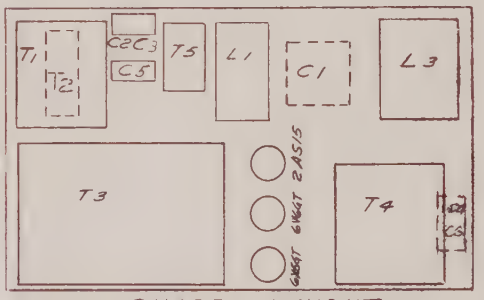
REV. LET.	
REV. ITEM	
REVISION	
DATE	
DRAFTSMAN	
CHECKED BY	
APPROVED BY	

SD200-870
DRAWING NUMBER



NOTES:
TRANSFORMER TAPS ARE SELECTED AT FINAL TEST AND MAY DIFFER FROM THOSE INDICATED.

ENCIRCLED VALUES ARE NORMAL D.C. POTENTIALS TO GROUND (CHASSIS) AT 115V. 400 CPS. INPUT & 115V. 400 CPS. OUTPUT & HALF LOAD.



CHASSIS LAYOUT

SERIAL NO. D-2080 TO _____

DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
	T4	AUTO TRAN. 126-1328		
REM. CHOKE 127-944	T6	FIL. TRAN. 126-1268	V1	2AS15
			V2	6V6GT
CHOKE 127-943			V3	6X5GT
	S1	SELENIUM RECT. 26-901		
	S2	SELENIUM RECT. 26-904	SW1	DPST "ON OFF SWITCH
2 TRANS. 126-1223			SW2	KLIXON CIR. BKR. 92-212
TRANS. 126-828	F1	FUSE 2 AMP 3AG		
RE REACT. 127-941				

SORENSEN & CO., INC.
STAMFORD, CONN.

SCHEMATIC DIAG.
MODEL D1200SAN

MAT'L

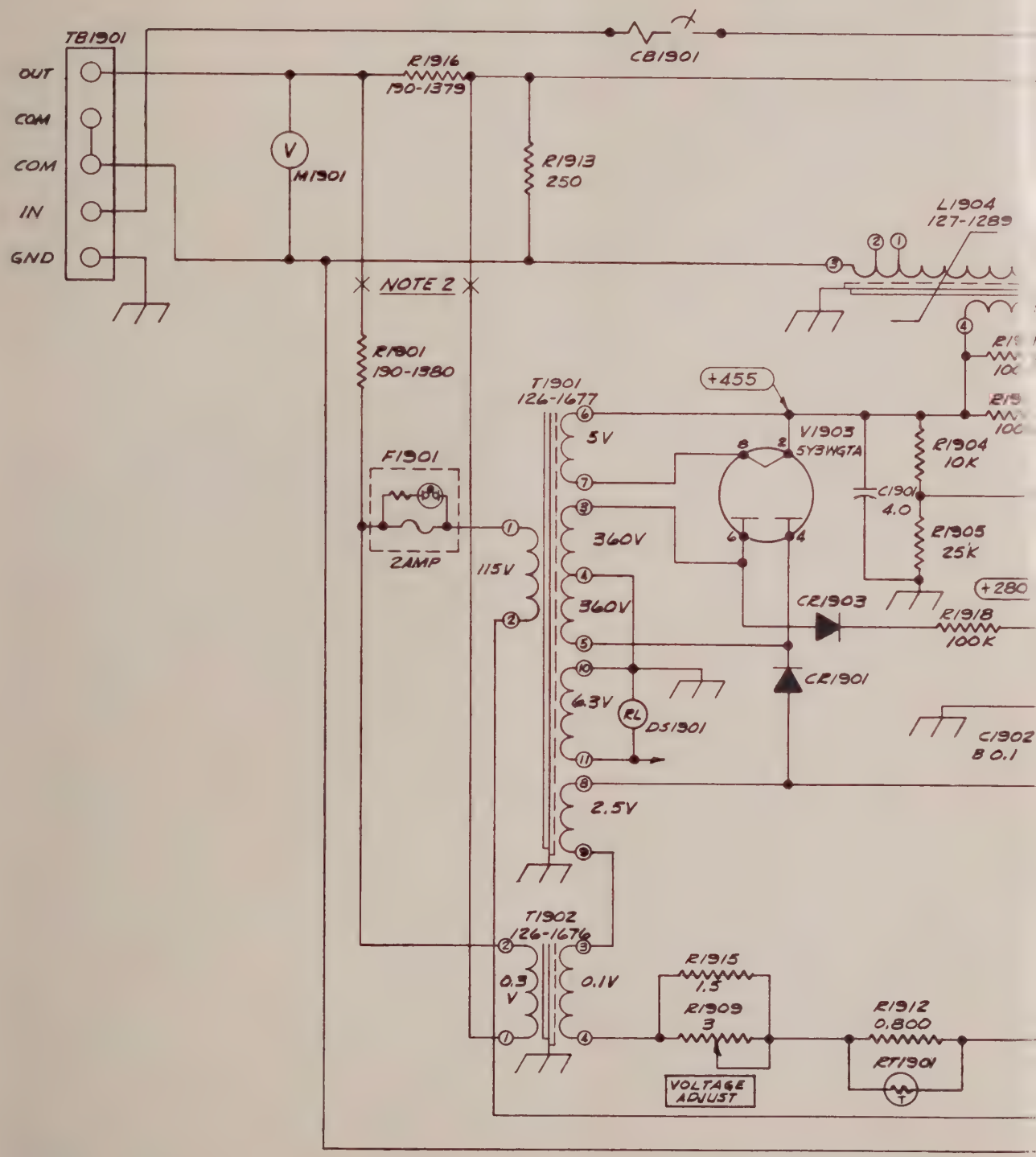
FINISH

SCALE

G.H 7/27/55 JSL 8-17-55
DRAWN BY DATE ELEC. DESIGN APPR. BY-DATE

CHECKED BY DATE APPROVED BY DATE

SD 200-870
DRAWING NUMBER



NOTES:

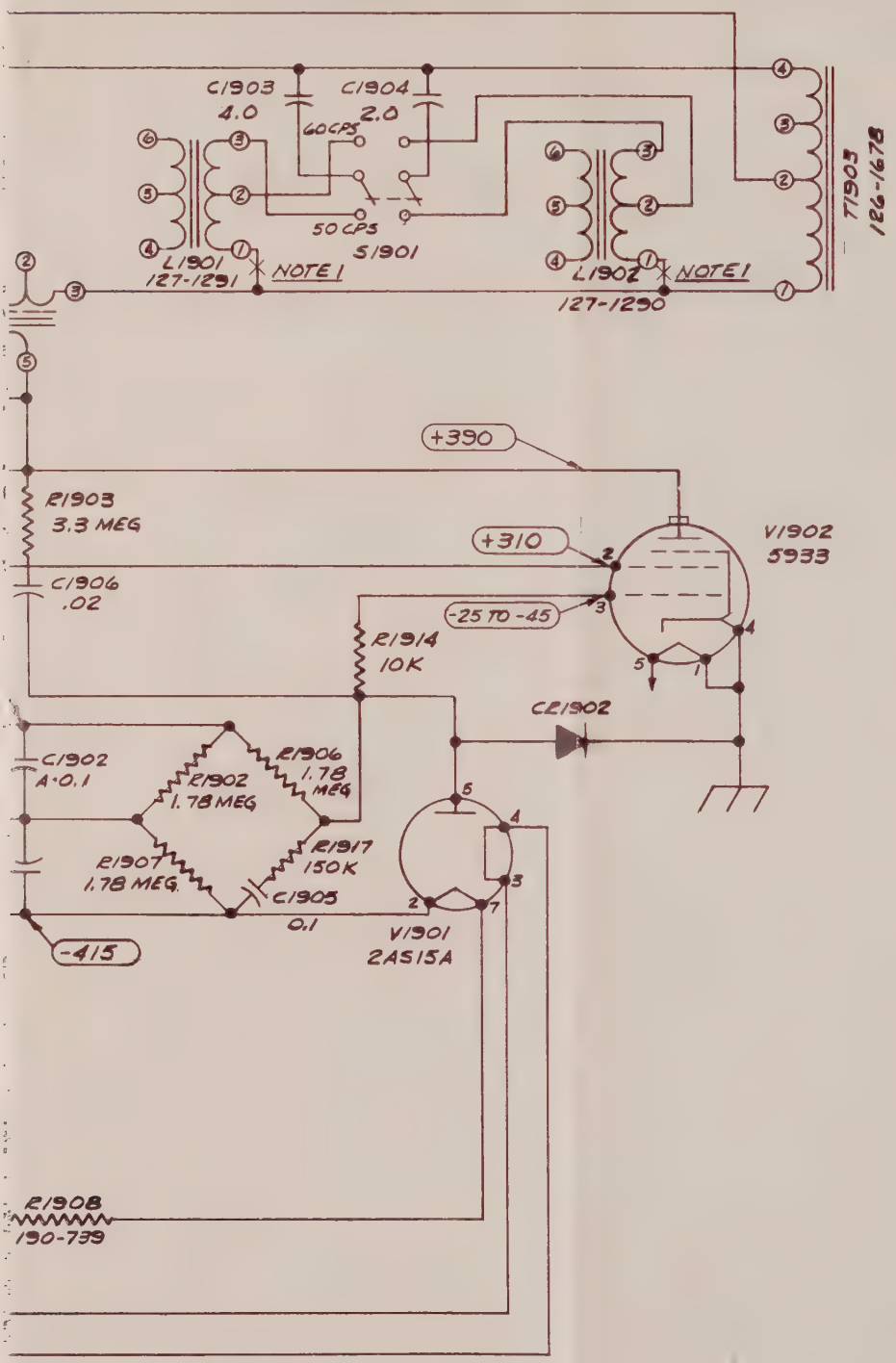
1.- FINAL TESTER MAY INSERT HERE ANY OF THE FOLLOWING CONNECTIONS 4-5, 5-6 OR 4-6 FOR RESONANCE.

2.- THESE TWO LEADS MAY BE INTERCHANGED AT FINAL TEST.

3.- VALUES ARE NORMAL D.C. POTENTIALS TO GROUND (CHASSIS) AT 115VAC INPUT 115VAC OUTPUT & 250VA LOAD.

4.- ALL RESISTANCE VALUES IN OHM. OTHERWISE NOTED. K=1000, MEG ALL CAPACITANCE VALUES IN OTHERWISE NOTED.

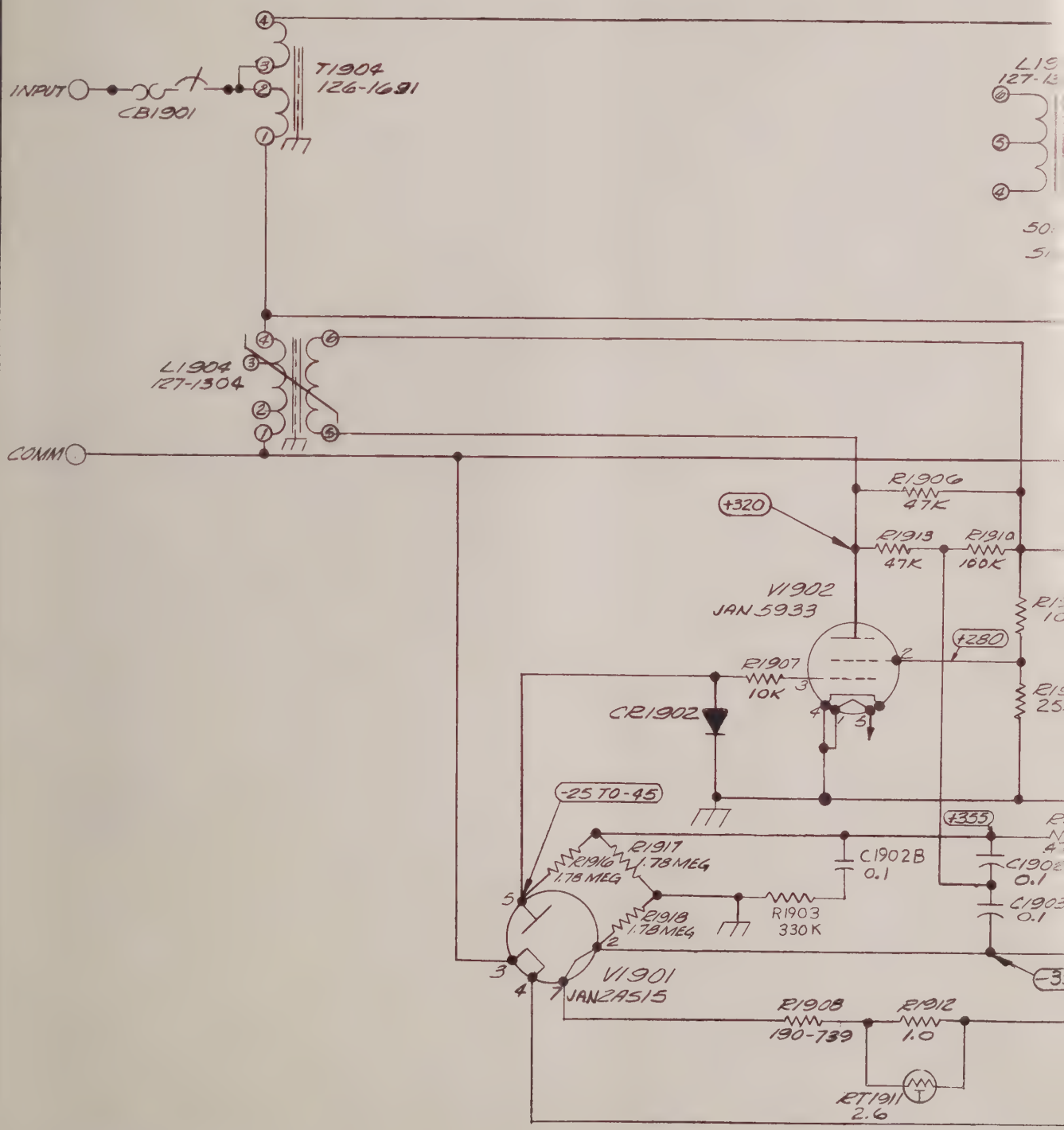
SD 200-1257



...5 UNLESS
...=1,000,000.
...MFD. UNLESS

SERIAL NO 8-1 TO _____

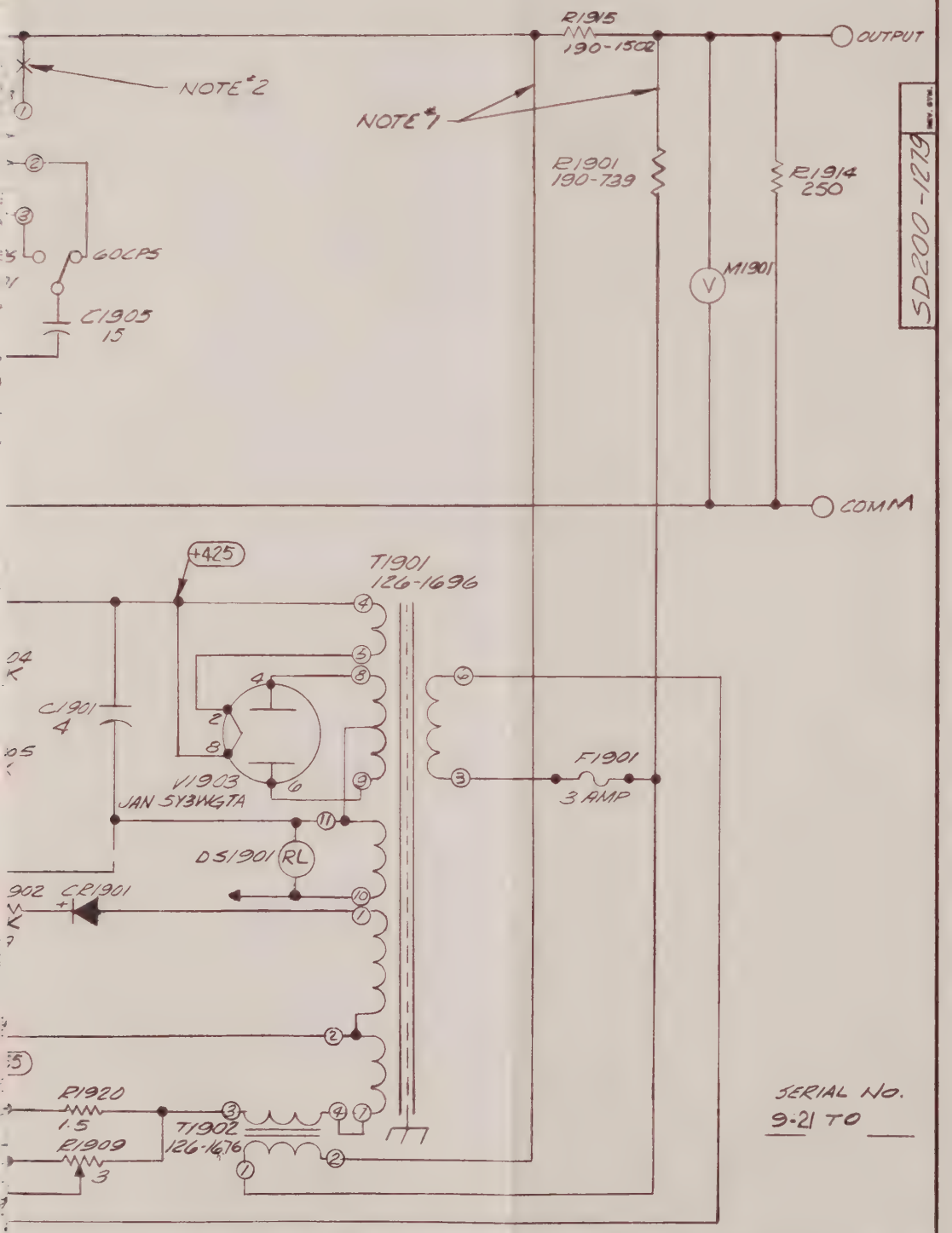
SORENSEN & CO., INC. STAMFORD, CONN.
SCHEMATIC 500MIL
DRAWN J.C. 3-10-68 APPROV.
SD 200-1257



NOTES:
1.- THESE LEADS MAY BE INTERCHANGED IN FINAL TEST
2.- WINDINGS 4,5 ORG CONNECTED IN AT "X" AS REQUIRED AT FINAL TEST. ALL VOLTAGE READINGS TAKEN WITH RESPECT TO GROUND 1500 VA LOAD 115VOLTS INPUT 115VOLTS OUTPUT 60CPS.
3.- ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE NOTED. K=1000, MEG.=1,000,000. ALL CAPACITANCE VALUES IN MFD, UNLESS OTHERWISE NOTED.

NEXT

REVISIONS					
SYM.	NO.	DESCRIPTION	DATE	BY	APPD.



MATERIAL	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1/2°	SORENSEN & CO., INC. SOUTH NORWALK, CONN.	
FINISH	DR. JACUARE DATE 11-21-58	SCHEMATIC 1500 MIL	
ASSEMBLY	CHK. DATE		
	APPD. DATE 12-9-58		
	SCALE	C	SD200-1279
	DO NOT SCALE DWG.		

SORENSEN & CO., INC.

QUALITY CONTROL FINAL TEST DATA — A.C. REGULATORS

Model D 250 SAN

Serial # 1504

Tester EJ

Date 4-26-61

Job # 36748

New ☑ Repair ☐ Modif. ☐

Hipot Test ☑

60 cps ☐ 50 cps ☐ 400 cps ☑

Start test o.k. ☑

Noise level o.k. ☑

Auto Taps .....

SCR Taps .....

Meter Reads ..... Volts at ..... Volts Output

Over Voltage Device Trips at Volts

Fast Starting Circuitry ☐

Load	Input Range 1% Regulation	95 / 190	115 / 230	130 / 260	Tot. Var. For Line	Harmonic Distortion Input Nom. In	Harmonic Distortion Output Nom. In	Harmonic Distortion Output High In
O	137	+.03	+.27	+.13	.24	%	%	%
¼		.00	+.15	+.13	.15	%	%	%
½		+.05	115.0	+.05	.05	%	%	%
F	92	+.20	+.05	+.10	.15	%	%	%
						%	%	%
	TOTAL VAR. FOR LOAD	.20	.27	.05				

Measured output range 102.5 to 124.0

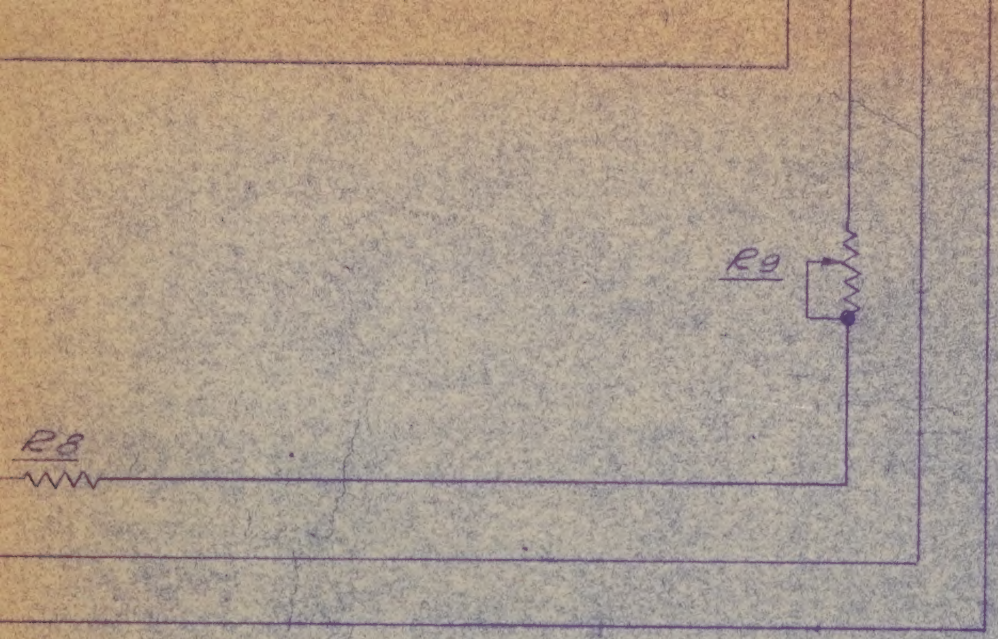
AC volts on DC coil of S.C.R. 47 VAC at full load, nominal input line (250V max.))

Fill in this section for first 10% of run or at least the first three units, whichever is the greater.

B+	Bridge +
V2 Plate	Bridge −
V2 Screen	V2 Grid 1

Reading at Nominal Input and Output, ½ load

REMARKS:



(CHASSIS) AT 115V 400 CPS. INPUT &
@ 115 V. 400 C.P.S. OUTPUT &
HALF LOAD.

* CONNECT (C9) IN FINAL TEST IF NECESSARY

TRANSFORMER TAPS ARE SELECTED AT FINAL TEST AND MAY DIFFER FROM THOSE INDICATED.

SERIAL NO. D-3060 TO

ITEM	DESCRIPTION
9 *	0.5 MFD 600 V D.C.
	3RD HARMONIC CHOKE 127-944
0	LOAD CHOKE 127-943
	POWER TRAN. 126-1223
	COMP. TRAN. 126-828
	SAT. CORE REACT. 127-942

ITEM	DESCRIPTION
T4	AUTO TRAN. 126-1331
T6	FIL. TRAN. 126-1268
S1	SELENIUM RECT. 26-901
S2	SEL. RECT. 26-904
F1	FUSE 2AMP 3AG

ITEM	DESCRIPTION
V1	2A3/5
V2	6V6GT
V3	6X5GT
SW1	KLIXON SWITCH BREAKER 92-340

MAT'L.

FINISH

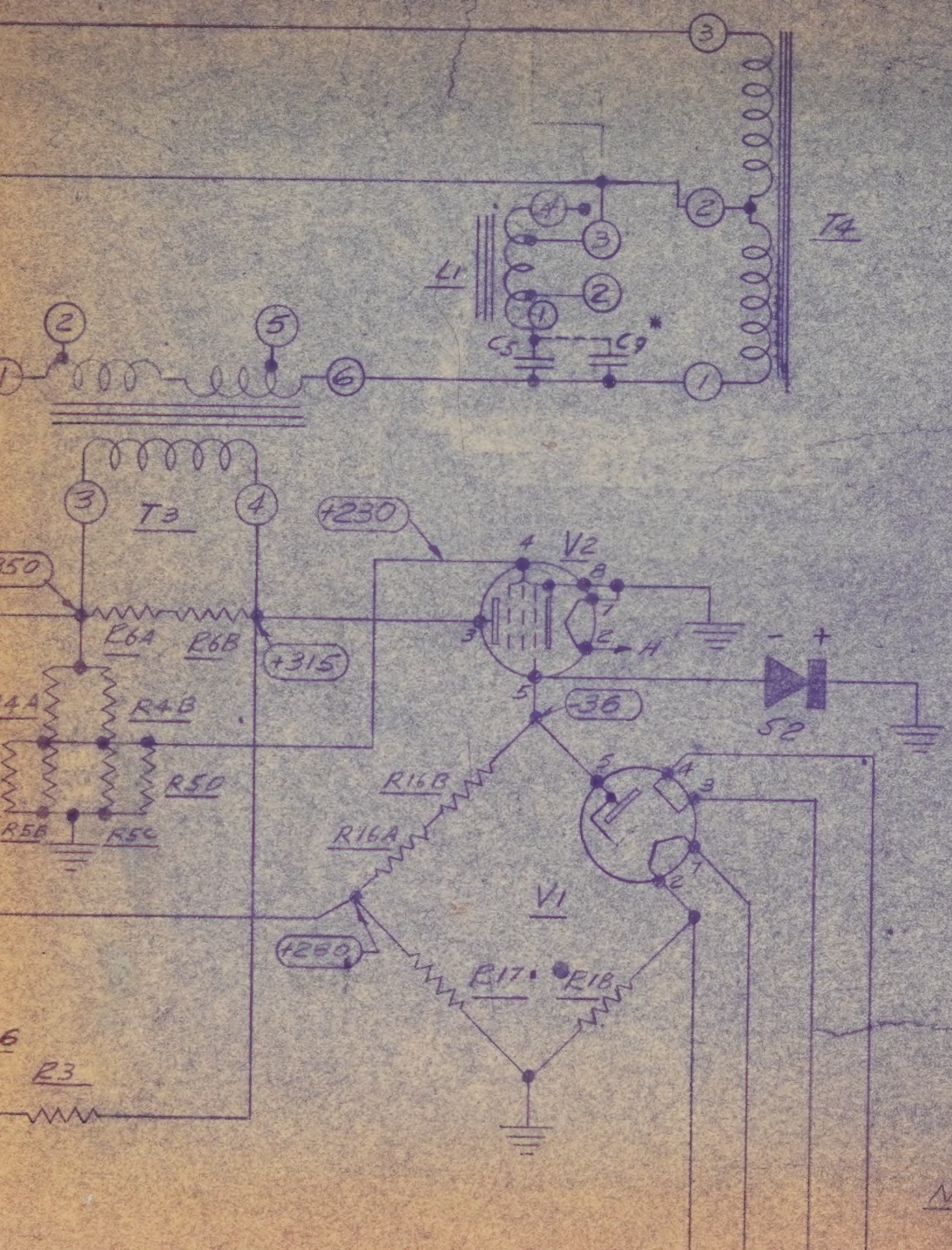
SORENSEN & CO., INC.
STAMFORD, CONN.

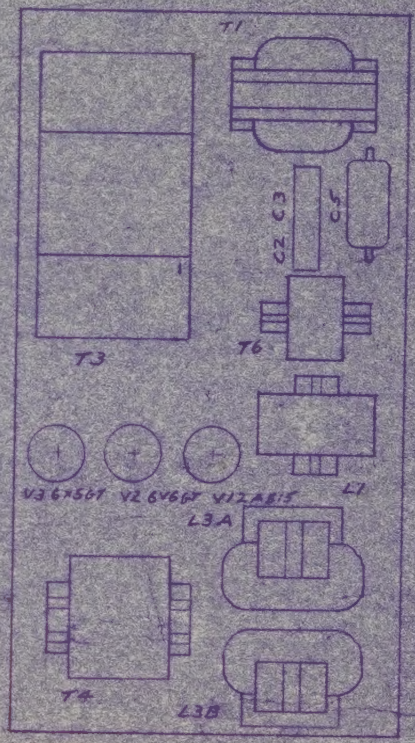
SCHEMATIC DIAGRAM
MODEL D2500SAN

G.A. 8-5-52 — DRAWN BY — DATE — ELEC. DESIGN APP'R. BY — DATE

CHECKED BY — DATE — APPROVED BY — DATE

SD 200-56 B

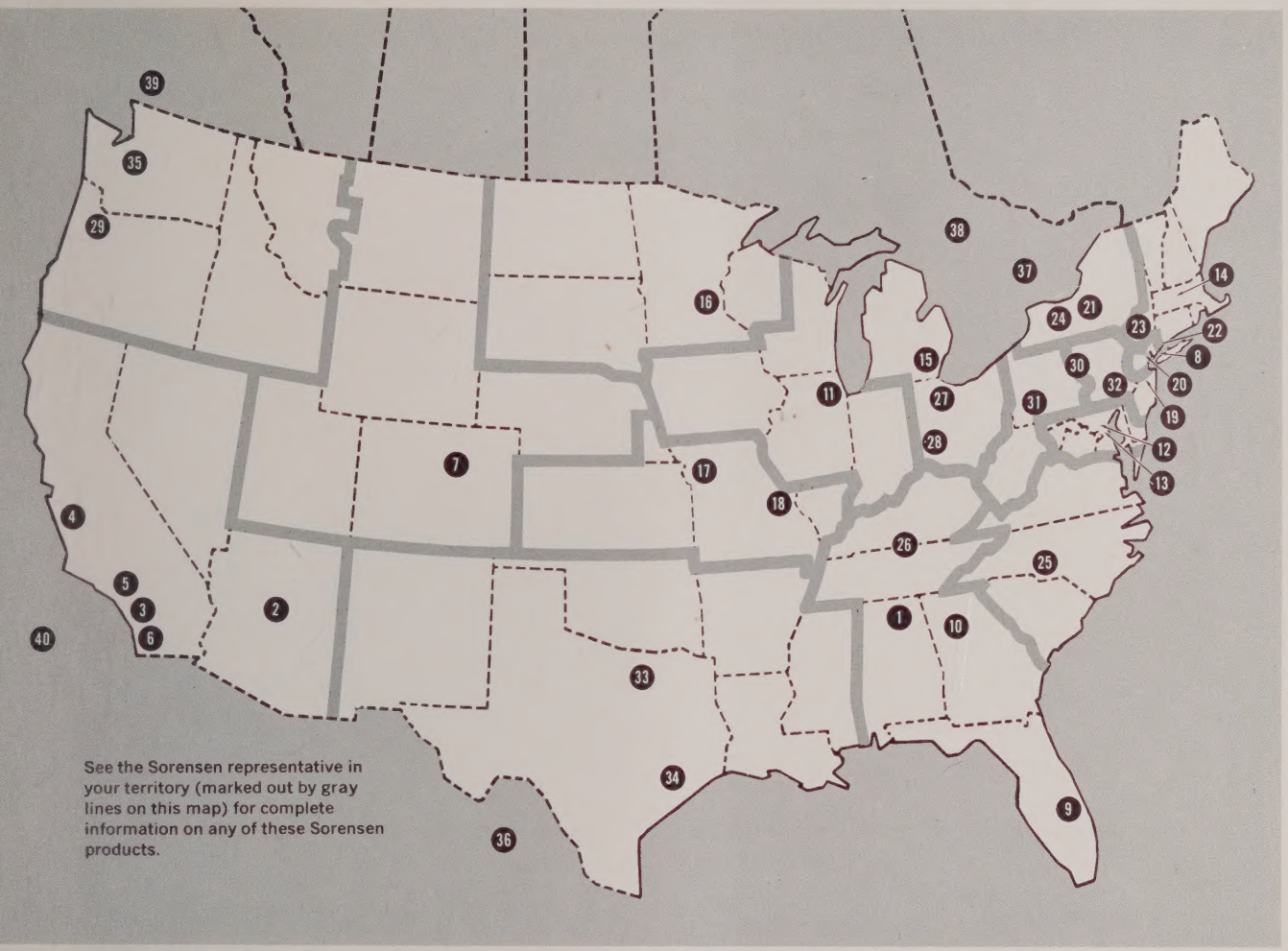




CHASSIS LAYOUT

NOTE:
ENCIRCLED VALUES ARE NORMAL

SD 200-658
DRAWING NUMBER


See the Sorensen representative in your territory (marked out by gray lines on this map) for complete information on any of these Sorensen products.

1 ALABAMA — Huntsville
Bivins & Caldwell, Inc.
JEfferson 2-5733

2 ARIZONA — Phoenix
McCarthy Associates
111 Osborn West, Suite 213
CRestwood 9-1891

3 CALIFORNIA — Hollywood
Sorensen's West Coast Warehouse
Bekins Warehousing Corp.
1025 No. Highland Ave.

4 CALIFORNIA — Menlo Park
McCarthy Associates
635 Oak Grove Avenue
DAvenport 6-7937

5 CALIFORNIA — Pasadena*
McCarthy Associates
1055 E. Walnut
SYcamore 2-8272

6 CALIFORNIA — San Diego
McCarthy Associates
934 W. Laurel Street
BElmont 9-4015

7 COLORADO — Denver 10*
Lahana & Company
1886 South Broadway
PEarl 3-3791

8 CONNECTICUT — Bridgeport
Yewell Associates, Inc.
1101 East Main Street
FOrest 6-3456

9 FLORIDA — Orlando
Bivins & Caldwell, Inc.
1226 E. Colonial Dr.
CHerry 1-1091

10 GEORGIA — Atlanta 5
Bivins & Caldwell, Inc.
3133 Maple Drive, N. E.
CEdar 3-7522

11 ILLINOIS — Chicago 45*
Pivan Engineering Co.
2820 Peterson Avenue
BRiargate 4-9135

26 KENTUCKY
Bivins & Caldwell, Inc.*
1923 N. Main Street
High Point, North Carolina
High Point 2-6873

12 MARYLAND — Baltimore 15
Horman Associates, Inc.
3006 W. Cold Spring Lane
MOhawk 4-8345

13 MARYLAND — Rockville*
Horman Associates, Inc.
941 Rollins Avenue
HAzelwood 7-7560

14 MASSACHUSETTS — Burlington*
Yewell Associates, Inc.
Middlesex Turnpike
BRowning 2-9000

15 MICHIGAN — Detroit 35*
S. Sterling Co.
15310 W. McNichols Rd.
BRoadway 3-2900

16 MINNESOTA — Minneapolis 3
Pinkney & Hine Company
1925 Nicollet Avenue
FEderal 8-0523

17 MISSOURI — Kansas City 30
Harris-Hanson Co.
7916 Paseo Avenue
HIghland 4-9494

18 MISSOURI — St. Louis 17
Harris-Hanson Co.
2814 S. Brentwood Blvd.
MIssion 7-4350

19 NEW JERSEY — Asbury Park
The I. E. Robinson Co.
905 Main Street
KEllogg 1-3150

20 NEW JERSEY — Englewood
RMC Associates, Inc.
391 Grand Avenue
LOwell 7-3933

21 NEW YORK — Dewitt*
J. E. Ryerson Associates, Inc.
111 Kinne Road
Syracuse—GIbson 6-1771
Mail: P. O. Box 1400,
Syracuse, N. Y.

22 NEW YORK — New York*
RMC Associates, Inc.
236 E. 75th Street
TRafalgar 9-2023

23 NEW YORK — Poughkeepsie
Yewell Associates, Inc.
806 Main Street

24 NEW YORK — Rochester 18
J. E. Ryerson Associates, Inc.
105 Pickwick Drive

25 NORTH CAROLINA — Charlotte 5
James L. Highsmith Co.
3733 Monroe Rd.
FRanklin 7-2546

27 OHIO — Cleveland 24*
S. Sterling Co.
5827 Mayfield Rd.
HIllcrest 2-8080

28 OHIO — Dayton 2
S. Sterling Co.
379 West First Street
FUlton 8794

29 OREGON — Portland 9
ARVA
1238 N. W. Glisan Street
CApital 2-7337

30 PENNSYLVANIA — Camp Hill
The I. E. Robinson Co.
2120 Market Street
REgent 7-6791

31 PENNSYLVANIA — Pittsburgh 27
S. Sterling Co.
4024 Clairton Blvd.
TUxedo 4-5515

32 PENNSYLVANIA — Upper Darby*
The I. E. Robinson Co.
7404 West Chester Pike
FLanders 2-7017

26 TENNESSEE
Bivins & Caldwell, Inc.*
1923 N. Main Street
High Point, North Carolina
High Point 2-6873

33 TEXAS — Dallas 9*
Earl Lipscomb Associates
P. O. Box 7084
FLeetwood 7-1881

34 TEXAS — Houston 5
Earl Lipscomb Associates
P. O. Box 6573
3825 Richmond Avenue
MOhawk 7-2407

35 WASHINGTON — Seattle 99*
ARVA
120 West Thomas Street
ATwater 4-7337

36 MEXICO
ELECTRO LABS., S.A.
Guanajuato #115
Mexico City, Mexico
Tels: 11-60-94, 11-70-58

CANADA

37 BAYLY ENGINEERING, LTD.*
Hunt Street
Ajax, Ontario, Canada
Toronto: EMpire 2-3741

38 BAYLY ENGINEERING, LTD.
48 Sparks Street
Ottawa, Ontario, Canada
CEntral 2-9821

39 BRITISH COLUMBIA
ARVA
355 Burrard St.—Room G7
Vancouver 2, B. C.
MUtual 1-3367

40 HAWAII
GENE PIETY FACTORS, INC.
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Richards Avenue, South Norwalk, Connecticut

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